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GROUP OF INDIAN WARRIORS of the Himalayan region during the Indo-Scythian period. The first and third wear coats of mail constructed of horn or leather scales, but whereas the figure on the left has an Indian turban and bare feet, that on the right has a helmet and high boots and is probably a Western mercenary. The half-naked warrior in the middle is possibly a native auxiliary. Date, A.D. 100-300.

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British Medical Journal.

THE JOURNAL OF THE BRITISH MEDICAL ASSOCIATION.

LONDON: SATURDAY, JANUARY 5TH, 1918.

SOME SURGICAL DEVELOPMENTS IN WOUND TREATMENT DURING THE WAR.

BY

COLONEL A. W. MAYO-ROBSON, A.M.S., C.B., C.V.O., F.R.C.S.,

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It might have been thought that the experience gained in civil practice would be directly applicable to war wounds, but this holds good only to a limited extent. Virtually all war wounds, with the exception of some bullet wounds, are not only septic but virulently septic; this is due to the contamination of the skin and clothing, as well as the fragments of shell and other foreign bodies driven into the tissues, by the germ saturated soil of the highly cultivated lands of France and Belgium.

At the present time the following distinct methods of wound treatment are being employed, and some of these have several or even numerous modifications:

1. Asepsis.
2. The treatment of septic wounds on general principles: free incision, removal of foreign bodies, thorough irrigation with or without antiseptics, and free drainage.
3. Antisepsis as introduced by Lister, and its modifications.
   (*a*) The use of alcohol alone, no water or watery solution coming near the wound.
   (*b*) The use of various more or less poisonous antiseptics, such as carbolic acid, mercury perchloride, mercury biniodide, iodine, potassium permanganate, eusol, flavine, chloramine-T, brilliant green, etc.
   (*c*) The Carrel-Dakin treatment, the continuous use of a solution of sodium hypochlorite.
   (*d*) Antiseptic pastes, such as treatment by bipp, introduced by Professor Rutherford Morison, or its modification by the use of other pastes
4. Physiological treatment, introduced by Sir Almroth Wright, who uses a hypertonic salt solution. Arising out of the latter, but distinct from it, the salt pack, introduced by Colonel Gray.
5. Surgical treatment—complete excision of the wound, including all contaminated parts and foreign bodies.
6. Bacteriological treatment, introduced by Dr. Donaldson and Major J. Leonard Joyce—that is, the introduction of a beneficent organism to kill the malignant germs.

A true perspective of the subject can probably best be obtained by one, possessing the necessary technical knowledge, who can remember the pre-antiseptic days and who has watched and taken part in the various developments of the scientific treatment of wounds. With an open mind he can appreciate the advantages and disadvantages of the various theories and methods and their practical application.

In the pre-antiseptic days surgery had little better to offer than the safe piloting of a patient through the inflammation which was almost certain to ensue on any wound, or to remove an injured limb in anticipation of the severe constitutional symptoms certain to follow an opened joint or a severe compound fracture.

I have always felt profoundly thankful that it fell to my lot to commence surgical work during the pre-antiseptic days, and as a post graduate to become a pupil and humble follower of that great genius who transformed surgery from an art to a science.

In the consideration of the germ theory of putrefaction as applied to infected wounds and their treatment, there are, however, other possibilities to be considered beyond the attempt to kill the micro-organisms by poisonous substances that also do harm to the living cells of the host.

We all have, fortunately, the faculty in a greater or less degree of being able to destroy bacteria when they have entered the body, but some individuals have it in greater degree than others; they are less prone to catch infectious ailments, and their wounds heal kindly under simple treatment. It follows from Metchnikoff's observations on phagocytosis that if the cells are in a vigorous state, as they are in a person in good health, he will be able to offer battle to our tiny but formidable adversaries with every probability of success; but the opposite holds also, and if the system is lowered by intemperate living, by excess of any kind, by overwork, want of exercise, insanitary surroundings, impure air, want of proper food, or in any other way, then the bacteria will find a suitable soil in which to grow, as the living cells are killed in the attempt. When the dead cells accumulate to a perceptible degree we speak of them as pus, which itself then becomes a source of trouble, and must be got rid of before recovery can occur. If only a few germs gain access to a wound, as in an ordinary clean bullet wound, or as even may be the case in a clean surgical operation, Nature should be quite capable of dealing with them; whereas, if large numbers are admitted, as, for instance, in the case of a portion of shell being driven through the dirty clothing and then through unpurified skin before it comes to lodge inside a limb, unaided Nature is powerless, and unless the surgeon intervenes, loss of limb or life is extremely probable.

TREATMENT ON GENERAL PRINCIPLES.

The foregoing explanations render it easy to realize why aseptic surgery has in a great measure replaced antiseptic surgery in the civil practice of the modern surgeon, and why antiseptic surgery in some form or other is necessary for the treatment of war wounds.

Aseptic surgery—that is, surgery carried out under the strictest and most rigid conditions of cleanliness—avoids the use of poisonous antiseptics such as carbolic acid and the mercury preparations, which it has been clearly proved damage the tissues and kill the living cells, which will themselves destroy any germs that might be accidentally introduced. For many years before the war I had carried out the principles of rigid aseptic surgery, and the satisfactory results obtained absolutely convinced me that the use of strong poisonous antiseptics was not only unnecessary but injurious in ordinary work.

When the war opened, my experience first in one of the London war hospitals, later at the front in France, and afterwards in Egypt and at the Dardanelles, confirmed my previous impressions that carbolic acid and other poisonous antiseptics were to be avoided, even in the treatment of septic war wounds.

When at the Dardanelles the wounded were brought off to the hospital ships within a few hours of being wounded, and I there had the opportunity of operating on a number of abdominal cases—among others such as gastric, intestinal, liver, and other visceral wounds—in all such cases *aseptic* treatment was employed and with great success, the use of strong antiseptics in the peritoneal cavity being, I consider, absolutely contraindicated.

We, however, soon realized that with the exception of a few through-and-through wounds, all other gunshot injuries, especially shell wounds, were virulently septic, and required rigorous treatment by free incision and removal of bits of clothing and other foreign bodies, and

by thorough irrigation with salt water or plain boiled water, or some mild antiseptic such as a weak permanganate solution, repeated as often as practicable, and free drainage. This led to the prevention of gas gangrene (at first a terrible scourge) and to good surgical results; it was the means of saving many lives or limbs that otherwise must have been lost.

The more efficient methods of treatment which enable wounds to be purified and closed at an early stage had not then been introduced. Nevertheless, by the means I have related, and which we may speak of as treatment on general principles, we were able to attain very fair results, and to put a stop to the practice of amputating in nearly all cases of gas gangrene.

When with the Mediterranean Expeditionary Force, I had the advantage of spending some little time on two hospital ships with Dr. Dakin, and of trying his solution on wounds before it had been generally adopted. I was then convinced that the hypochlorite solution, since known by his name, was the most efficient antiseptic hitherto employed, for while it was an active bactericide it apparently did not seriously damage the tissue cells. The great difficulty was that in dealing with very large numbers of wounded, with limited staffs of surgeons and nurses and with inadequate accommodation, it was physically impossible to irrigate the wounds as frequently as we knew to be desirable. The hospital ships, of course, afforded only temporary accommodation for the wounded, which were transported as speedily as possible to the base hospitals in Egypt, Malta, and elsewhere, where more elaborate treatment could be carried out.

ANTISEPSIS.

Antiseptic surgery, introduced by Lister, but since modified and improved in many ways, aims at killing the germs already introduced into wounds, but the perfect antiseptic, which, while fatal to germ life, is not injurious to the living cells in the wound, has yet to be discovered.

The strong poisonous antiseptics, such as carbolic acid, mercury perchloride and biniodide, are now only used externally, to purify the skin, and they have in the hands of modern surgeons been replaced as a rule by milder non-toxic drugs, which are better bactericides and less injurious to the living cells in the wounds, from which help is sought in the healing processes.

My first experience of an antiseptic operation, long before Lister introduced his system, was in 1875, in Glasgow, and the case was one of amputation of the thigh for senile gangrene. After steeping the hands and instruments in spirit, the limb as well as the wound were washed in pure whisky and dressed with lint soaked in the same spirit. No drainage was employed. The wound healed by first intention, and the patient, a man of over 70, made a good recovery.

Where other means are not available, alcohol used in this way is most efficient, and as it is generally available in nearly every household, a surgeon need never be powerless for want of an antiseptic in the most out-of-the-way place. I have frequently used it successfully.

Two recently introduced antiseptics—flavine and brilliant green—we owe to work at the Middlesex Research Laboratory. Flavine used in a strength of 1 in 1,000 has been extensively advertised both in the lay and in the medical press, but it has not realized in practice all that has been claimed for it. It may be used to irrigate recent wounds or as a pack in large infected wounds, or it may be employed by means of Carrel's tubes instead of Dakin's fluid. Some surgeons speak well of it. It is non-poisonous and non-irritating, but it stains everything a brilliant yellow. Although, as a rule, it tends to clean dirty wounds, in some cases it appears to retard healing by destroying the new epithelium at the wound margin and retarding the growth of granulation tissue, thus necessitating a change of dressing in the later stages of the case. The pathologists of various hospitals have reported that it is not an efficient bactericide, and in no cases is it safe to attempt the closure of wounds by suture after treatment by flavine, as is done in the Carrel-Dakin treatment.

Brilliant green is used in the same way as flavine, and has been especially useful in staining wounds as a preliminary to excision. It is spoken well of by many surgeons who have employed it in the treatment of war wounds. I saw it used extensively when with the Mediterranean Expeditionary Force.

Eusol is one of the most efficient antiseptics the surgeon can employ, and is closely allied to Dakin's fluid; it is easily prepared, keeps well in ordinary bottles, and is non-poisonous. This chlorine preparation, unlike Dakin's fluid, is stable, and therefore available in situations where there is no chemist at hand to give a regular daily supply of freshly made lotion.

Chloramine-T is also an extremely useful antiseptic, coming under the same class as eusol and Dakin's fluid.

The ordinary antiseptic methods leave very much to be desired; as although, by free incision, removal of foreign bodies, thorough irrigation with some antiseptic and free drainage, virulent sepsis and gas gangrene can as a rule be effectually treated, the patient is left in many cases with enormous granulating wounds that take many weeks or even months to heal, leaving him a wreck constitutionally, and with enormous disfiguring and disabling scars, leading to deformity and rendering him unfit for military or other work.

Carrel-Dakin Treatment.

This modification of antiseptic treatment has been a real surgical advance, for in the course of a few days (from 5 to 14), if properly carried out, it usually renders septic wounds sterile, and enables them to be completely closed by sutures, thus doing away with the long-continued discharges of an ordinary granulating wound, and saving the patient from a wearisome and painful illness, ending in deterioration of health and deformities due to huge scars.

After meeting Dr. Dakin at the Dardanelles, and using his fluid successfully in numerous gunshot wounds, I met Dr. Carrel in France, and had the opportunity of seeing the Carrel-Dakin treatment carried out in recent wounds as well as in cases already very septic. When carried out as the authors suggest it is most successful; but I am bound to confess that in many hospitals where I have seen what professed to be the Carrel-Dakin treatment, it was anything but successful, as the fluid was not carefully or freshly prepared, the surgeons did not carry out the after-dressings personally, and the aid of a pathologist was not obtained.

In the French hospitals the solution is carefully tested by skilled chemists, the operative technique and the after-dressings are carried out by the surgeon himself with as much care as in any aseptic operation, and the discharges are regularly examined by a skilled pathologist. So soon as the wound fluids are sterile or are found to contain only one or two germs in several microscopic fields, the wound can be completely closed from end to end by sutures and it heals like a primary operation wound.

The multiple irrigation tubes, perforated along their whole length, 4 mm. calibre and 30 cm. long, are inserted into the depths and recesses of wounds, and enable the nurse to flush the wound with a little of the solution every two hours by means of a clip on a tube leading from a glass reservoir suspended over the patient. In this way the wound is kept constantly bathed with the Dakin solution and the pathogenic germs are destroyed and prevented from developing.

The appearance of the patients thus treated is very striking, they have a clear complexion, are free from pain, have no rise of temperature, have a good appetite, and, with few exceptions, even the most extensive and foul wounds become sweet and clean and can be completely closed by suture within a fortnight or even earlier in some cases. A great disadvantage is the difficulty of carrying out this treatment during transport, which has given a very wrong impression to surgeons working in England, as the cases often arrive in a very foul condition and compare unfavourably with those treated by salt packs or by "bipp."

Antiseptic Pastes.

The antiseptic paste called "bipp" from the initials of its components—bismuth, iodoform, and paraffin—was introduced by Professor Rutherford Morison, and as a primary or secondary dressing in gunshot injuries has proved to be most effective. Cases treated with it can be transported safely without fear of becoming septic from want of dressing during the journey, and in this respect it has advantage over the Carrel-Dakin treatment.

Mr. Rutherford Morison's statement with regard to the treatment in his hands may be read in his article published in the BRITISH MEDICAL JOURNAL for October 20th, 1917. Bipp, I find, can be used in cases treated by the Carrel-Dakin method for a few days, and when the wound is not

yet absolutely sterile the use of the paste enables it to be safely closed by suture, thus saving time and trouble to the patient and attendants. Captain Hey prefers a paste without bismuth or iodoform but containing brilliant green, boric acid, french chalk, and liquid paraffin, which he uses with great confidence after excision of the infected part as a primary measure, or after the Carrel-Dakin treatment as a secondary procedure. His results closely resemble those obtained by the use of bipp.

PHYSIOLOGICAL METHOD.

Sir Almroth Wright is an opponent of antiseptic surgery, and suggested the use of hypertonic saline solution—the so called "physiological treatment," which, he claims, draws out from the tissues of the wounds an abundant fluid containing cells, which attack and destroy the germs of disease; and that these, together with bits of dead tissues and dead cells, are carried away by the free outpouring of fluid. A dressing wet with the hypertonic saline solution must be left in the wound or the wound must be kept constantly irrigated with the fluid. The chief merit of this treatment lies in the fact that it helped to break the spell which had bound surgeons to antiseptics in the treatment of wounds essentially septic.

Out of this method Colonel H. M. W. Gray evolved the "salt-pack" treatment to promote a so-called lymphagogue action, thus obviating the need for drainage or continuous irrigation. The great merits of the salt pack lie in the ease with which it can be applied, and in the fact that it can be left *in situ* for several days without renewal, thus saving the patient the distress and pain of frequent dressings; that it accomplishes all the changes which Sir Almroth Wright insists upon as being necessary for the successful cleansing of a wound from infection, and that its effects are not interfered with by the transport of the patient.

Although the bacterial flora of the wounds treated by the salt pack are numerous and the discharges are offensive, the wounds do well as a rule, become clean, are speedily covered by healthy granulations, and heal rapidly; moreover, wounds treated by salt packs are extraordinarily free from secondary haemorrhage.

The process is simple in the extreme. After opening up and purifying the wound as far as possible, the salt packs are placed in it, and over all an absorbent dressing; as the dressing does not need renewing for some days, the saving of time to the attendants is very considerable.

Hitherto the good results have been attributed in some obscure way to the salt acting more or less on the physiological lines suggested by Wright, but all who have witnessed the employment of salt packs have felt that some other explanation is necessary. This I shall have to refer to later in considering the pathological treatment of wounds.

THE SURGICAL METHOD.

In gunshot injuries, besides the introduction of pathogenic organisms, there is in every case actual destruction of tissue by the force of entry of the projectile; there is necessarily, therefore, a varying amount of dead or devitalized tissue present. It is in this that the organisms elaborate the poisons, and it is from this source that the toxins enter the system. If the dead tissues can be removed the source of the poison is taken away. The strong antiseptics, which aim at killing the germs in the wound, only effect their purpose partially and slowly; not only do they fail to remove the dead tissue which is the breeding ground, but they produce more by their destructive effect on the living cells. Even under the continuous application of the Carrel-Dakin method, from five to fourteen or more days are required before the wound is rendered sterile.

The physiological method, which relies on the living cells throwing off the dead tissues and destroying the pathogenic organisms, is long and uncertain in its action; moreover, while dead tissues remain, they are a source of danger and capable of again lighting up fresh mischief. Hence, the tendency of surgery now is at as early a stage as possible to excise the whole of the infected area—or, in other words, the dead and damaged tissues. But in doing this it inflicts a fresh injury, often very extensive, and one liable to reinfection.

Captain Wilson H. Hey says that the case for complete excision should begin and end all discussions on the wounds of war; without it good antiseptics and pastes are almost useless. He stains the whole of the wound with brilliant green, and, if possible, excises the wound without allowing the knife to enter the wound cavity; the wound is pasted and primarily sutured in some cases, but in others, especially where a complete primary operation cannot be done, every trace of stained tissue is excised, the wound is dried throughout with spirit, and the paste rubbed into the tissues, and with all thoroughness into every recess. When all is going well the dressings are not disturbed for two or three days, and if the smear counts average only 0.2 to 2.0 per field the wound may be sutured on the third to the fifth day. Where progress is unfavourable the wound is repasted, or further operative measures may be required under anaesthesia; in some cases hot fomentations are used, and suturing is only performed at a later stage.

It will be seen that this method, which is only available if the case is seen early, and involves a more or less severe operation, not only saves much time in the healing of the wound, but also saves the patient from the dangers of sepsis and secures a more or less linear scar. This treatment should only be carried out by a skilled surgeon, otherwise material deformity may be inflicted if the wound be extensive.

BACTERIOLOGICAL TREATMENT.

The bacteriological treatment of wounds is the result of very interesting work carried out at the Reading War Hospital by Dr. Robert Donaldson and Major J. Leonard Joyce, F.R.C.S., in septic wounds of all kinds arriving from the front at various periods after the injury has been inflicted.

Major Joyce, who is a strong advocate of the salt-pack treatment, noticed that under this treatment the wounds that were doing well emitted a powerful and offensive odour, and those not doing well were devoid of smell.

The observers found in the offensive discharges of the cases that did well an oval sporing bacillus which was absent from the cases not doing well, and they ultimately isolated it in pure culture. This organism, when introduced into a fresh meat-broth tube and incubated at 37° C. anaërobically, in two or three days emitted the characteristic wound odour and the meat began to blacken and diminish in volume, indicating active proteolysis. This at once suggested the part possibly played by the bacillus in wounds—namely, that it did in the dead wound tissues what it appeared to do in the glass tube—that is, it digested them.

As the organism was found to be non-pathogenic to animals and as the fluid in which it was grown contained no elements toxic to animals, it was considered safe, after thorough irrigation and purification, to introduce it into wounds that were not doing well under salt packs; with the result that the characteristic odour soon developed, the temperature came down, the patients became comfortable, and in a few days the wounds became clean, devoid of sloughs and covered with healthy granulations.

The question then arose as to the part played by the salt, and it was found that the wounds containing the anaërobic germs (now called the Reading bacillus) did as well when sphagnum moss replaced the salt; in fact the idea that the salt has any specific value is exploded.

Thus a point has been reached in which can be recommended a treatment which involves the simplest technique, the simplest and cheapest of dressings (for salt or sphagnum moss can easily be obtained) and the least disturbance to the patient. It does away with the need for frequent dressings and the mental and physical sufferings entailed thereby.

In order to ensure success, however, it is necessary that the organism or its spores be present, and although it frequently is, it cannot be depended on to be present. Hence in such cases the wound ought to be sown with the organism at the time of packing. In fact, it reminds one of the old adage, "Set a thief to catch a thief."

In treating wounds by this method it is important to lay them freely open, every pocket being dealt with, all foreign bodies removed, and any grossly damaged tissue taken away. The wound must then be irrigated with sterile water or saline solution, and the pure culture of the Reading bacillus introduced by means of a pipette. The packing of salt or sphagnum moss moistened with sterile water is then introduced into the wound so as to bring it into contact with every part, over this several layers of

plain moist gauze are laid, and over all a thick layer of cotton-wool, after which the whole is bandaged firmly. A splint is an additional advantage.

If all is going well, as shown by the general condition, the pack is left in for about seven days (about the third day the characteristic odour will develop), when it can be removed and the granulating wound irrigated with warm normal saline or eusol solution, after which a healthy wound only requires treatment, and either by the Carrel-Dakin method or by the use of antiseptic paste it can soon be closed by suture.

Selection of Method.

With all these methods of wound treatment to choose from I may be asked which I prefer.

In cases seen at the front the first duty of the surgeon in all shell wounds is to lay the wound fully open, including every pocket, to remove all foreign bodies and bits of clothing as well as loose particles of bone and dead or damaged tissue, to arrest bleeding, and to irrigate the wound thoroughly with some antiseptic such as eusol or Dakin's fluid, or hypertonic saline or alcohol—in fact, to treat the case on the general principles well known as suitable for poisoned wounds; this, followed by free drainage, was the method carried out with more or less success in the early months or first year of the war.

Now, although this led to saving of life and to abolishing violent sepsis and gas gangrene, it left large wounds to heal by a long process of granulation, and led to exhaustion of vital powers and to deformity caused by large scars. Now, however, we have several methods to choose from to shorten the treatment subsequent to the first necessary operation.

(*a*) The Carrel-Dakin treatment, with closure of the wound in from a week to a fortnight, is, if the case can be got shortly to a good hospital and kept there, the ideal method, and it has certainly given excellent results, but it is not good for cases that have to be transferred by sea and rail.

(*b*) If the patient has to be transferred—as, indeed, have the greater number of cases—after cleansing the wound and drying it with alcohol, the bipp treatment with closure of the wound affords an excellent method; this is especially the case if the wound has been completely excised, when either bipp or the paste recommended by Captain Hey can be used.

(*c*) The salt-pack treatment used by Colonel Gray is excellent both for transport and subsequent treatment, to be followed in about a week or more by the Carrel-Dakin or bipp methods.

(*d*) For the care of septic suppurating wounds arriving constantly at the base hospitals both in France and in England, the pathological method followed out at Reading of grafting the purified wound with the Reading bacillus under packs of sphagnum moss is both simple and effective, and the experience there is that secondary haemorrhage has never occurred under this treatment.

The modern treatment of gunshot wounds gives ample scope for the skill of both surgeon and nurse, and is attaining a state of perfection that could hardly have been expected by those who saw the dreadful prevalence of gas gangrene and its treatment by amputation in the early stages of the war.

Whatever the other services engaged in the war may or may not have done, I think we can without hesitation say that the medical services and the nursing service have both "made good," to use a term coined on the other side of the Atlantic.

When the war started we had a small Army Medical Service to meet the needs of our "contemptible little army," to use the Hun expression. The administrative work that this small service has accomplished under the genius of our present Director-General, Sir Alfred Keogh, has been phenomenal, and can only be appreciated by those who know the difficulties that have had to be met; but I venture to think that it will figure largely in the history of the war.

The way in which the civil branch of the profession has taken up its work as part of the medical service of the army is not the least wonderful record of a great sacrifice. The leading physicians and surgeons giving up their consulting practices have, the former, thrown themselves into the prevention of disease as well as its treatment, and the latter have undertaken the treatment of the legitimate risks of war—wounds and casualties. From their ranks have also been drawn the army consulting physicians and surgeons to act and advise wherever the British army is on active service.

Not only this, but all the towns and villages of the empire, whether in the colonies or at home, have spared so many of their doctors and surgeons that the civil population has had to make no little sacrifice in order that the numerous war hospitals and hospital ships almost all over the civilized world might be staffed with physicians, surgeons, anaesthetists, and specialists of all kinds, who have performed their many duties with the same skill and care that they previously gave to their private patients.

The work of the nursing service is beyond all praise; they have been the ministering angels ever ready and always present to give help and comfort to the sick and wounded. Wherever they move they carry with them the gleam of the ideal—the symbols of love, mercy, patience, and sacrifice. I have seen many of them in the thick of the work, when the wounded were coming straight from the battlefield and where the sad sights were enough to blanch the stoutest hearts, never flinching, but steadily pursuing their beneficent duties. Not a few of them have given their lives to the cause—some have been killed by the shells of the enemy, others have died from disease contracted when on duty, others have been drowned when serving on hospital ships, and one at least has suffered martyrdom, but still their numbers increase and still more are wanted.

THE TREATMENT OF GONOCOCCAL ARTHRITIS BY SENSITIZED GONOCOCCAL VACCINE.

BY

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SENSITIZED VACCINES were first employed by Besredka in 1902. He prepared vaccines of this type for prophylactic use against cholera, plague, and typhoid fever, sterilizing by heat either before or after sensitizing with the specific serum. He claimed that active immunity was produced almost immediately and with little local reaction or constitutional disturbance.

Later, Broughton-Alcock employed sensitized living vaccines in the treatment of infections of the staphylococcal, gonococcal, and streptococcal types. He obtained his specific serums for the purpose of sensitizing the cultures by first administering to the patient an ordinary vaccine of the infecting micro-organism, and using the serum of the patient thus infected to sensitize the living vaccine.

In 1913 Lieut.-Colonel Gordon, R.A.M.C., published a paper in the *Lancet* on "Sensitized vaccine in acute bacterial infection," in which he gave the results obtained in a series of cases. He showed that in the treatment of all types of infection by *Streptococcus pyogenes* (among these he includes streptococcal septicaemia and post-puerperal streptococcal endometritis), out of nineteen cases treated twelve showed great improvement after administration of the vaccine. He admits disappointment at the results obtained after employing sensitized staphylococcal vaccines. However, the results in the streptococcal infections above mentioned suggested that it might be useful to try the administration of sensitized gonococcal vaccine in the joint infections which, as a rule, improve very slowly or not at all with the ordinary method of treatment.

The sensitized gonococcal vaccine was prepared in the following manner:

The first case treated was a patient whose knee-joint was affected. The swollen joint was aspirated and fluid removed which was markedly purulent.

A pure growth of gonococcus was obtained from this on blood agar. This was subcultivated on blood agar at intervals of two days until a good growth resulted. Then a series of blood agar slopes were inoculated and incubated for twenty-four hours.

An emulsion of the growths on these slopes was made in 15 c.cm. of sterile saline solution (normal saline being used). The growth was removed from each slope by means of a platinum loop, each loopful being washed off into the saline solution by agitation. The tube was then closed by a rubber cap and shaken vigorously by hand for ten minutes.

After this the amount of turbidity was noted and an approximate count made of the total number of gonococci (in millions) contained in the test tube. This was noted. Then 15 c.cm. of antigonococcus serum (B. W. and Co.) were added and the whole vigorously shaken to ensure thorough mixing of serum and bacterial emulsion.

The mixture was then incubated for twenty-four hours at 37° C. The tube was removed from the incubator after this and inserted in a test-tube rack (to retain it in a vertical position); this was then placed in a refrigerator for twenty-four hours. By this time the gonococci had formed a deposit at the bottom of the test tube.

The supernatant fluid was removed by hand pipette and 15 c.cm. of sterile saline solution added to the deposit. The whole was then well shaken, after which the tube was returned to the test-tube rack and replaced in the refrigerator for a further period of twenty-four hours.

After this the same procedure was followed, and the supernatant fluid was again removed and replaced with 15 c.cm. of sterile saline solution and the whole shaken and returned once more to the ice chest for twenty-four hours.

At the end of this time the supernatant fluid was again removed, leaving only the deposit, and 15 c.cm. of sterile saline solution were again added. To this was now added 1 c.cm. of a 10 per cent. solution of carbolic acid. The tube was well shaken and placed in the refrigerator for three or four days, during which period it was well shaken twice daily.

At the end of this time the bacterial emulsion was tested for sterility, and if sterile was ready for use. Having already noted the total number of gonococci present when the emulsion was first made, it only remained to divide this number by the figure 16 to obtain the strength of the vaccine in millions per cubic centimetre.

The first case treated was given this autogenous sensitized vaccine. The improvement in his condition encouraged me to continue the method, because he had previously been treated first with stock vaccine consisting of mixed gonococci and staphylococci, and subsequently with an autogenous gonococcal vaccine without apparent benefit, whereas when the sensitized vaccine was given a decided improvement in his condition was noted. However, the strain died, and as our numbers here are rather large to permit us to prepare an autogenous vaccine for each individual case, it was decided to employ a stock sensitized gonococcal vaccine prepared from several strains of the micro-organism.

Fresh strains of gonococci obtained from various urethral discharges were subcultivated several times, and then forty-eight hours cultures employed.

Four strains of gonococci were used in the preparation of the vaccine, and as a forty-eight hours' growth of gonococcus does not emulsify so readily as a twenty-four hours' growth, the emulsion was made in the tube of sterile saline, the tube closed by a rubber cap, and then placed in a mechanical shaker, where it was kept vigorously shaken for one hour. At the end of this time the tube was taken out of the shaker, and the approximate strength of the emulsion in millions of gonococci noted.

The procedure then continued on the same lines as in the preparation of the autogenous sensitized vaccine just described—namely, addition of antigonococcus serum incubation for twenty-four hours, washing twice with saline, etc.

The advantage of using a sensitized vaccine in contradistinction to an ordinary vaccine is that one can push the dosage and still get practically no local or general reaction. Occasionally the patient will complain of the affected joint or joints being more tender to the touch within a period of several hours after the administration.

In dealing with the question of dosage a routine was tentatively drawn up as follows:

1st day	25	million of	gonococci
2nd day	50	,,	,,
3rd day	100	,,	,,
5th day	150	,,	,,
7th day	200	,,	,,
9th day	250	,,	,,
12th day	300	,,	,,
15th day	350	,,	,,
18th day	400	,,	,,
22nd day	450	,,	,,
26th day	500	,,	,,
30th day	550	,,	,,

Then an increase of 50 million every fifth day.

In the first series of cases this dosage was adopted.

CASE I.

This patient had a watery gleet on admission. There was marked swelling of the left knee, which was acutely painful. Temperature varied from 100° F. to 102° F. The joint was aspirated on three occasions and fluid removed.

He was given a stock mixed vaccine of gonococci and staphylococci without any improvement. This was followed by an autogenous gonococcal vaccine, during the administration of which the patient remained the same. A sensitized gonococcal vaccine was prepared from this strain and administered according to the above-mentioned routine. He had the course up to the eighteenth day, when the dose was 400 million of gonococci. After the third dose the pain was easier, and the temperature came down to normal, at which, with an occasional rise, it remained practically all the time the patient was in this hospital. He could lie comfortably while at rest, but movement of the affected leg continued painful. He had been emaciated, but began to put on flesh rapidly.

After the administration of the vaccine on the eighteenth day he was transferred to England, where his temperature for six days was between 99° F. and 100° F., after which it remained normal. Pain on movement continued for three weeks, and swelling for four weeks, when the left knee showed half an inch greater circumference than the right.

CASE I

Admitted February 24th, 1917, with purulent urethral discharge, and pain and marked swelling of the right knee. Vaccine treatment was commenced on the following day. The pain became easier and the swelling began to diminish on February 27th. The pain had disappeared on March 17th and the swelling on March 24th. The result was that the joints became quite freely movable and he was able to walk perfectly. The temperature on admission was 101.6° F. It fell to 100° on the fourth, was normal on the twentieth day, and so remained.

CASE III.

Admitted January 26th, 1917, with purulent urethral discharge and pain and swelling in finger and wrist joints of both hands. The vaccine was commenced on the following day. Swelling began to diminish on February 7th and had completely disappeared on March 18th. Pain became easier on February 16th and had completely gone on February 20th. The result was that the movements of hands and fingers were quite good. The temperature was normal on admission and remained so afterwards.

CASE IV.

Admitted on January 29th, 1917, with gleet and stiff and painful neck. *X*-ray examination on January 14th showed thickness of spinous process and also of body of second cervical vertebra. The diagnosis of gonococcal infection having been made, the vaccine treatment was begun on February 16th. On February 19th pain was easier, on March 5th movements of the neck were quite good, and on March 17th all trace of pain and limitation of movement had gone. The temperature was normal throughout.

CASE V.

Admitted February 1st, 1917, with purulent urethral discharge and some swelling and pain of the knee-joint. Vaccine treatment was commenced on the following day. The pain became easier on February 12th and had completely gone on March 1st. Swelling began to diminish on February 13th and had disappeared on March 1st. The result was that the joint was perfectly well. There was a slight rise of temperature for the first few days.

CASE VI.

Admitted February 1st, 1917, with swollen and painful right elbow, but no urethral discharge, though he had had gonorrhœa on January 19th, 1917. Vaccine was begun on February 2nd; three days later the pain was easier and the swelling began to go down. On February 10th pain had entirely gone. On February 16th the swelling had disappeared, and a week later extension and flexion of the forearm were almost complete. Temperature was normal throughout.

CASE VII.

Admitted January 1st, 1917, with gleet and some swelling of both knees and both ankles. Patient was much attenuated. Vaccine was begun next day. On January 14th the pain became easier. On January 16th the swelling began to go down, and next day both pain and swelling disappeared. The patient was then evacuated to England, as he was still very much wasted, and his legs were very weak. His temperature was normal throughout.

CASE VIII.

Admitted January 14th, 1917, with purulent urethral discharge. On January 26th some swelling and pain appeared in the left ankle. Vaccine was begun on February 6th. On February 9th the pain became easier, and the swelling began to go down. On February 12th the pain and swelling had gone. The result was complete recovery of the joint. The temperature was normal throughout.

CASE IX.

Admitted January 22nd with right epididymitis and some swelling and pain of the right knee. Vaccine was begun the same day. On January 30th the swelling began to go down. On February 10th the pain became easier, disappearing two days later. The swelling had gone by February 15th. The result was complete recovery of the joint. The temperature was normal throughout.

CASE X.

Admitted February 20th, 1917, with purulent urethral discharge, and some swelling and pain of the left knee. Vaccine was begun on that day. The swelling began to go down on February 28th, and the pain improved on March 11th; by March 26th both pain and swelling had gone. In the result the patient was still weak but able to walk, and the joint was freely movable. The temperature was normal throughout.

As regards local treatment of the joint every patient had rest and application of Scott's dressing.

The above-mentioned cases gave encouragement to continue with the sensitized vaccine, but it was thought desirable to try the administration of bigger doses.

On that account the following routine was adopted in the cases reported below:

1st day	... ...	100	million of gonococci.
5th day	... ...	200	,, ,,
9th day	... ...	400	,, ,,
13th day	... ...	600	,, ,,
17th day	... ...	800	,, ,,
21st day	... ...	1,000	,, ,,
25th day	... ...	1,200	,, ,,

And increasing 200 million every fourth day up to a maximum of 2,000 million.

CASE XI.

Admitted May 16th, 1917, with gleet, some swelling and pain of left wrist, and slight swelling of left shoulder with marked stiffness and restricted movement. Vaccine was begun the same day, and on May 23rd the pain became easier and the swelling began to subside. On June 6th the pain and swelling had gone. The result was that movements at the wrist were quite normal, and only slight restriction of movement remained at the shoulder. The temperature was normal throughout. In this case the local treatment was by ionization.

CASE XII.

Admitted April 14th, 1917, with purulent urethral discharge. On July 3rd some swelling and pain appeared in the left knee. Vaccine was begun next day. The pain became easier on July 13th, and the swelling began to subside on the 14th. The pain and swelling had gone on August 6th. In the result the knee was practically normal, though movement was somewhat restricted. The temperature was normal throughout.

CASE XIII.

Admitted June 11th, 1917, with purulent urethral discharge, and some swelling of the left knee. Vaccine was begun on July 11th, and the pain was easier two days later. The right knee developed slight swelling and pain on July 16th. By July 18th the left knee was greatly improved. On July 28th the right knee was free from pain. Two days later the left knee was better and all other joints were normal. Finally on August 18th all movements were normal.

CASE XIV.

Admitted June 15th, 1917, with purulent urethral discharge, well-marked arthritis of the left elbow with fluid, early arthritis of the right elbow, and pains in the right leg. Temperature 102° F. Vaccine was begun the same day. The pain was less on June 21st, and the swelling less on June 27th. The pain disappeared on July 10th, and the swelling on July 14th. A week later movements in the arms were normal.

CASE XV.

Admitted June 30th, 1917, with purulent urethral discharge, swelling and tenderness of left ankle and knee. Temperature 99.4°. Vaccine was begun at once; on the following day the right ankle was swollen. On July 14th both pain and swelling had diminished, and the ankles and knee were greatly improved on July 16th. By August 1st the pain had left the affected joints, the left knee was practically normal, the right knee normal, but the left ankle still slightly swollen. This patient showed marked reaction to the vaccine when he received a dosage of 1,200 million, after which he had transient pains in all his joints.

CASE XVI.

Admitted July 8th, 1917, with purulent urethral discharge and both knees swollen and painful. Temperature 99.6°. Vaccine was begun the same day, and the pain and swelling abated on July 13th. On July 18th the right knee was greatly improved; the left knee slightly improved. The next day there was slight pain in the right ankle, and on July 23rd the fingers of the left hand swelled. The right ankle was free from pain on July 24th. On August 15th the knee movements were practically normal, and on August 23rd the hand was better and the left ankle almost well.

CASE XVII.

Admitted July 23rd, 1917, with gleet, and swelling and pain of left knee, but no fever. Vaccine was begun the same day. The pain and swelling were less on July 28th. The knee was greatly improved on July 31st, and the pain had gone on August 16th. By August 20th the knee was practically normal in its movements.

The last six cases were all treated locally with Scott's dressing, lead and opium fomentations, and ionization.

From a consideration of these seventeen cases I feel justified in recommending the administration of sensitized gonococcal vaccine as a line of treatment worthy of trial in cases of acute and subacute gonococcal infection of joints.

The first case, as already stated, was given an autogenous sensitized gonococcal vaccine, the micro-organism being grown from the fluid aspirated from the knee. All the other cases were treated with sensitized gonococcal vaccine prepared from four strains of gonococci, all of which were obtained from urethral discharges. None of these strains was autogenous for any of the cases treated.

I have the impression that recently-obtained strains are best for this purpose, and endeavour has been made to avoid using gonococci which have been subcultivated for more than four months, the strains being discarded at the end of that period and younger ones employed. Four strains of gonococci have always been employed in the preparation of the stock vaccine.

In the matter of dosage the second routine has the advantage of being less troublesome for both patient and medical officer, and the results are quite as good as with the first routine; the second is to be recommended, though probably one might give even bigger doses with safety.

Only a few of the cases treated have shown any reaction after administration. Case xv showed the most marked reaction, and one or two of the others had a slight increase of pain in the affected joint or joints, which generally disappeared after a few hours.

I have to acknowledge my indebtedness to Captain C. Lundie, R.A.M.C., and Captain W. J. Ronan, R.A.M.C., for giving the vaccine an extended trial in their cases and for so kindly supplying me with the clinical notes. I must also thank Captain Billington, R.A.M.C., for his helpful suggestions when I began this work.

A NOTE ON MUSCLE NERVE TESTING DURING OPERATION.

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THE following is a brief account of the method adopted for the electrical testing of a peripheral nerve at the time of operation at the Military Orthopaedic Hospital, Shepherd's Bush.

It is necessary, in the first place, to emphasize the extreme importance of testing the excitability of the nerve in many cases, and that it is therefore essential that the surgeon should be prepared to do so in every case. If, on cutting down on the nerve, a complete anatomical division is found, with an end bulb on the proximal end and perhaps an inch or more of separation, there is no need to test the electrical conductivity of the nerve.

But very often this is not the case. The exposed nerve may show a thickened area with no anatomical division, and the question arises whether or no there is physiological conduction through this. It may be thought that a complete investigation of the case beforehand should suffice for diagnosis, but it happens sometimes that the notes of cases are not complete, and that the surgeon may not be fully familiar with the case. In any case, a diagnostic method as easily applied and as valuable as is that under discussion should always be made use of.

It is quite simple to test the conductivity of the nerve, and the result, coupled with a consideration of the history, will give a clear indication whether the lesion is recovering or not.

The relative rapidity of return of voluntary power and of faradic excitability (as ordinarily tested) after injury is not constant; sometimes the one and sometimes the other returns first. If the exposed nerve is stimulated faradic response in the muscles always precedes, in my experience, the return of voluntary power. It occurs so often that it may be regarded as a constant factor.

Illustrative Case.

Pte. H. Gunshot wound through neck, August, 1916.

There was a lesion of the fifth and sixth cervical nerves, with paralysis of the deltoid, biceps, and supinator longus muscles. The scars of entrance and exit were in the root of the neck.

The case was treated with the arm in abduction for five months, in order to relax the deltoid and biceps. As there was no evidence of recovery, exploration was decided upon. The fifth and sixth cervical nerves were explored in the posterior triangle, together with the upper trunk and its anterior and posterior divisions. Some scar tissue was dissected off during this exposure, and the nerves were stimulated. Faradic excitability was evidenced by contraction of the biceps, deltoid,

and supinator longus muscles, and the wound was closed. Two months later faradic response and voluntary power were regained in the paralysed muscles. The recovery was neither hastened nor retarded by the operation, in all probability, but the response to the test rendered further exposure unnecessary, and made the prognosis as to recovery favourable.

Testing is sometimes of use in another way when operating on cases in which there is much scar tissue and the anatomical relations of parts are disarranged. Any nerve or branch can be stimulated and defined with certainty by noticing the muscle or muscle groups which contract on such stimulation.

The Apparatus.

The apparatus required consists of (1) a faradic coil and metronome, and (2) electrodes and connecting cords which can be sterilized by boiling.

The only essential of the coil is that it shall yield a sufficiently weak current. The coil we use yields a current so weak that it can only just be appreciated when both electrodes are placed on the tongue. If the current is strong, the overflow to the muscles other than those which are being tested causes general contractions, and renders accurate observation impossible. This difficulty is commonly met with.

The metronome interrupter is the simplest method to adopt in testing. The metal probe is held in contact with the nerve, and at each beat of the metronome the electrical circuit is made or broken. The testing electrode has not to be moved, and an accurate observation is easily made.

The testing electrode, a long metal probe with a terminal at the end for the attachment of the connecting wires, is far simpler than the type sometimes employed, consisting of two platinum wires insulated in a glass handle. These dipolar electrodes are easily broken—for example, in boiling—and, moreover, great care has to be exercised that both points, which are close together, are making contact with the nerve at the same time. The metal probe electrode is absolutely simple, cannot get out of order, and there is no difficulty in being sure that it is making contact with the nerve.

The cords and connexions are all sterilizable by boiling. There is no need, therefore, to wrap them in towels and so waste time during the operation, and there is no risk of infecting the wound. The connecting cords can lie on the sterilized towels by which the field of operation is shut off without risk.

The secondary electrode necessary to complete the circuit is attached to any convenient part well clear of the site of operation. In testing the nerves of the arm, for example, it is attached to the foot.

Method of Application.

The nerve is isolated and the field of operation rendered dry by swabbing. A glass rod is passed under the nerve and the metal probe is placed in contact with the nerve. The core is fully withdrawn, one cell actuates the battery, and one layer of secondary is used (the studs for these adjustments are clearly marked on the coil), and the metronome is started. A normal nerve will be stimulated by this weak current, and the muscles supplied by it will contract at each beat of the metronome. If there is no contraction the current is strengthened by pushing in the core, and if further strength of stimulus is necessary by using two layers. Any current stronger than this is unnecessary, and will simply cause contractions in the surrounding normal muscles by leakage along the nerve sheath.

With the equipment advised and a nurse or assistant told off to work the metronome and turn on and off as directed, the testing takes only a minute or two.

As a point of interest and as showing how weak a stimulus is used the following fact may be noted: In stimulating the median nerve exposed in the arm, the muscles put into action vary according to the exact part of the circumference of the nerve which is stimulated. Thus the pronator radii teres or the flexors of the wrist, or the long flexors of the thumb and index finger can be made to react as practically pure and uncomplicated actions.

Incomplete Lesion.

In dealing with incomplete or partial division of a peripheral nerve it is sometimes necessary to suture part of the nerve and to leave other fibres intact. An exact estimate of the extent of the paralysis is of value. Incomplete lesions are not uncommon in the cords of the brachial plexus, and are frequent in the sciatic.

Pte. J.; simple fracture of femur at the junction of the middle and lower thirds, complicated by complete paralysis of the muscles supplied by the external popliteal nerve and weakness of those supplied by the internal popliteal.

On exploration it was found that the lesion was situated at the entrance to the popliteal space and that the sciatic was not divided but existed as one trunk.

Faradic stimulation both at and above this point yielded no contraction in the external popliteal supply. By dissection the external popliteal element was freed and found to be totally divided, whilst a marked thickening of the sheath, in which were embedded fragments of bone, caused a thickened lump in the internal. This was all dissected off, and the nerve was again stimulated. As it responded it was proved that no damage had been done to the conducting power of the nerve during this extensive cleaning of the sheath.

Complete Lesions without Anatomical Division.

In such a case as the following the absence of faradic response, together with the length of history, indicated the necessity for exsection and suture.

Pte. G.; gunshot wound of forearm, lower third, with paralysis of ulnar, intrinsics of the hand, and loss of sensation in the ulnar area. Exploration four months after the injury.

The ulnar nerve was exposed and found in anatomical continuity, but with a small hard nodule, the size of a pea, in the substance of the nerve. No faradic response was obtained by stimulation of the nerve trunk above the lesion. The nodule, which occupied the entire thickness of the ulna, was excised and end-to-end suture performed. Macroscopically there was no evidence of nerve fibres in the excised nodule.

EYE CHANGES IN TRENCH NEPHRITIS.

BY

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DURING the spring of 1917 I had the opportunity, while on duty at Malta, of examining a series of cases of trench nephritis, or what is probably the more correct term, war nephritis. They were seventy or eighty in number, and all came in the same convoy from the Macedonian front. They were chiefly young active soldiers between 20 and 30, though they were a few older men among them. The history was generally the usual one of fairly severe exposure and strain, though not necessarily in the front line. Nearly all the cases presented the disease in a severely acute form, and on their admission were mostly seriously ill. At that time the fundi of a large number were examined, either by myself or by my colleague, Dr. Moffett. We found almost invariably marked retinal congestion, with large pulsating veins. There were no signs then, however, of any patches of exudation or nerve involvement. Some weeks later, however, on the examination of one or two patients who had complained of eye symptoms, we found present the more definite changes of nerve swelling, accompanied by patches of retinal exudation. We then decided to examine the whole series again, and by degrees this was done, with the following result. To make the points clear the cases may roughly be classified at the time of this examination (somewhere about three months from the onset of their illness) into three groups, A, B, and C.

Group A numbered about 21. They were all convalescent, presenting practically no symptoms except slight anaemia and debility. The urine was free from albumin, except for a very slight trace in a few. In only four of this class were retinal changes found, and they were slight in amount—a few small spots of exudation, a small punctate haemorrhage, a slight haziness of the disc edges, or a little oedema along the course of the veins.

Group B—a series of 20 cases who had not done so well as the others. Albumin was generally present, though in small quantity. There was breathlessness and slight oedema often. Of these cases, 8 showed minor retinal changes, with small exudation spots. One, however, showed much more marked changes, pointing to a fairly severe neuro-retinitis.

Group C, 13 in number, were severe cases in which the disease was still marked. They were suffering from

general symptoms, severe oedema with often a large quantity of albumin in the urine and sometimes blood. Of these 13, 4 showed very definite retinal changes and 4 changes of a slighter nature.

As far as could be ascertained, there were no signs of any other complicating disease, with the exception that several cases showed malarial infection. In none was there any history of previous kidney attacks. In 9 of the cases presenting the more severe retinal changes a Wassermann test was done, and in all of the 9 the result was negative.

Some points in regard to the fundus changes are:

1. That while the spots of exudation were generally in the usual situations—that is, near the disc and in the macular area—in no case was seen the typical silvery star-like figure of the chronic cases as figured in the textbooks.

2. Haemorrhage was not common. Those seen were of the small punctate variety, and not of the striate or flame-like character.

3. The optic disc was often affected, the changes varying from a definite swelling to slight woolliness and indistinct edges.

4. Small areas of oedema were noticed, especially along the course of the veins.

5. An important point was that in several of the series I was able to trace the gradual absorption of some of the smaller patches of exudation, and the healing process was very interesting to watch.

Summary.

To sum up the matter, I would say:

1. That in this disease the retina is very liable to be involved, although gross changes are not evident in the early stages, and latterly changes which had been present may have become absorbed.

2. That the pathology is probably an acute congestion resulting from some specific toxin, that the exudation which ensues is partly lymphoid and partly cellular in nature, and that this deposit probably clears up in the great majority of cases, without leaving any permanent results.

3. That the retinal changes do not affect the prognosis, except in so far that the severer these changes the severer the cases, in many instances, though by no means necessarily so.

4. That the condition is one which is probably allied to the acute retinitis of pregnancy, scarlatina, and acute uraemia, and should not be confounded with the retinitis of chronic kidney inflammation with its permanent changes in the retinal circulation vessels and tissues.

I have to thank my colleague, Dr. Elizabeth Moffett, for her help and assistance, and also the C.O. of Valletta Military Hospital, Lieut.-Colonel Slaughter, R.A.M.C., for his kind permission to publish these notes.

SYCOSIS AND OTHER CHRONIC STAPHYLOCOCCAL INFECTIONS OF THE SKIN, AND THEIR PREVENTION.

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At the present time considerable numbers of able-bodied men become invalided on account of chronic staphylococcal infections of the skin. These infections include: (1) Sycosis menti, and similar affections of other hairy parts, namely, the upper lip, the eyebrows, the eyelashes, the scalp, and the pubes and axillae; (2) chronic furunculosis; (3) chronic eczematized impetigo of the trunk and extremities.

The majority, probably all, of these cases could be avoided were the initial skin complaint correctly diagnosed and efficiently treated.

These staphylococcal infections may be all included under one term—impetigo of Bockhart; and an important fact not generally recognized is that they always, or nearly always, arise as a secondary complication of another form of impetigo—impetigo contagiosa of Tilbury Fox—an affection which is comparatively easy to cure.

The distinctions between the two groups of impetigo—first clearly demonstrated by Sabouraud in 1900—are not even yet sufficiently known, probably because they are not pointed out, or not pointed out sufficiently clearly, in textbooks devoted to diseases of the skin. The distinctive characters of these two kinds of impetigo may be summarized as follows:

Impetigo Contagiosa of Tilbury Fox.

This is a highly contagious skin complaint due to the *Streptococcus pyogenes*. The characteristic lesions are the amber-coloured stuck-on crusts, which are formed by the dried-up serum of vesicles or blisters. In other words, the lesion resulting from streptococcal invasion of the surface of the skin is a superficial blister, which contains clear serum, which so rapidly dries into a crust that the early vesicle is usually unobserved. If, however, we remove the crust with forceps, we see a superficial erosion, with an overhanging fringe of the horny layer of the epidermis, which has exactly the appearance of, and indeed is, the floor of a broken blister.

This streptococcal impetigo contagiosa is of very common occurrence among children of the poor in the form of a crusted eruption upon the face or scalp. It is seen sometimes, too, as an epidemic among public school boys as what is known as "scrum-pox." It not infrequently attacks the chin and cheeks of male adults as a result of infection while being shaved. It occurs also on the limbs and trunk as a complication of scabies. In soldiers it is seen particularly in these two latter forms, on the head and cheeks or upper lip, as a result of a visit to the barber, and on the limbs and trunk and sometimes the face, in association with scabies.

It is from these two generally easily cured forms of impetigo contagiosa that arise most of the incurable staphylococcal infections—sycosis, furunculosis, and chronic impetigo—which may be grouped together as impetigo of Bockhart.

Impetigo of Bockhart.

This is a staphylococcal infection of the hair follicles which results in the formation of perifollicular pustules. The pustules may be small and closely set on some hairy region, as in sycosis menti, or they may be larger, and scattered over the trunk and limbs, as in furunculosis. In contrast with the superficial vesicular lesion of impetigo contagiosa, that of impetigo of Bockhart is a deeply seated pustule. The streptococcal invasion leads to a superficial serous exudation; the staphylococcal infection to an exudation of polynuclear leucocytes or pus cells, deeply in the tissues round a hair follicle.

Treatment of Streptococcal Impetigo.

In spite of the often formidable appearance of a streptococcal impetigo and of its tendency to spread rapidly, it is, on account of its superficial character, generally very easily cured by appropriate treatment. The staphylococcal impetigo, on the other hand, because of the deeply seated infection, is much more difficult to deal with, and many cases of long standing seem to be practically incurable. Herein, then, lies the importance of the early diagnosis and cure of impetigo contagiosa, since, as has already been said, nearly all, if not all, cases of incurable, or difficultly curable staphylococcal infections of the skin arise as a complication of uncured impetigo contagiosa. The usual sequence of events in these circumstances is as follows: A man gets a simple impetigo contagiosa of the chin and cheeks—superficial, amber-coloured, stuck-on crusts, which rapidly increase in number and extent. The eruption is perhaps diagnosed as eczema, or it is correctly diagnosed but not treated in exactly the right way, and as a consequence the eruption persists, and the vesicles and the crusted erosions become secondarily invaded by staphylococcus. The staphylococcus, once established, invades the hair follicles, and little follicular papules and pustules begin to appear. Soon the whole beard region becomes involved, so that every hair follicle is the site of a papulo-pustule, though the discharge from the conglomerated papulo-pustules often dries as a crust, which covers the chin and masks the follicular nature of the eruption. The condition is then that of sycosis menti, a most obstinate affection to deal with. The man remains under treatment in hospital for months, sometimes years, and has treatments by ointments, by vaccines, and by *x* rays. But the sycosis remains uncured.

In many instances the sycosis does not remain limited to the beard region, but attacks also the eyebrows and eyelids, the scalp and the upper lip, the pubes and the axillae, and a furunculosis of other parts of the skin, of the neck, or the trunk or the limbs may be added to his other affliction.

In the second type of case the man has scabies complicated by turbid vesicles on the hands and feet, and crusted patches on the limbs and trunk. On the buttocks there is often a more severe type of impetigo contagiosa—that is, ecthyma, in which the crusted erosion is converted into a shallow ulcer with inflamed base, and with or without a dirty-brown crust.

Most of these cases of impetigo complicating scabies yield in the early stage to the three hot-water and soft soap baths, and the three sulphur ointment applications of the treatment for the scabies. But cases not treated early and thoroughly may develop later a generalized eruption of boils—that is, a chronic furunculosis, or they may be converted by scratching into eczematized impetigo, with eczema-like, infiltrated, itchy, crusted areas on the limbs and trunk, which often resist all treatment.

The Treatment of the Initial Impetigo Contagiosa.

The whole secret of success in the treatment of the initial impetigo contagiosa is to remove first of all every trace of crust and every overhanging blister margin. This is best and simplest done by prolonged and frequent mopping with hot water. The patient is made to mop off the crusts by bathing the affected parts for half an hour two or three times daily. At the same time all crusts must be carefully wiped off with wool or picked off with forceps. Immediately after the bathing the eroded surfaces are mopped with lotio hydrarg. perchlor. 1 in 6,000, or with lotio cupri sulphatis 1 in 8,000; then an ointment (ung. hydrarg. ammon. chlor., gr. x ad ʒ j) is smeared on, to remain until the next mopping. When the impetigo complicates scabies and involves the limbs and trunk, it may be necessary to continue the hot baths beyond the three prescribed for the scabies treatment, and to substitute ung. acid. boric. for the ung. sulphuris after the third sulphur ointment application Obstinate patches of ecthyma are best treated by complete removal of the crusts by repeated mopping with hot water, followed by careful and thorough application to the shallow ulcer of argent. nitratis gr. xv, spirit. aetheris nitrici ʒ j.

The Treatment of Staphylococcal Infections of the Skin.

This is a much more difficult theme. The once much-vaunted treatment by vaccines has not proved the panacea it was proclaimed. In quite early cases of staphylococcal infection it is, however, worth a trial, for here it does sometimes seem to give remarkably good results. But, while even in early infections its results are uncertain, in long-standing chronic sycoses and furunculosis it lamentably fails, and often does harm. The *x*-ray treatment of sycosis has given equally disappointing results. It is always possible, by complete depilation, with *x* rays, to produce what at first appears to be a cure, but almost invariably the disease relapses so soon as the hair grows again. We are generally compelled, therefore, to resort to the older methods of treating sycosis, and in cases where the infection is limited to the upper lip, to the "imperial," or to a part of the chin, cures may be eventually brought about by repeated depilation with forceps and applications of antiseptic ointments. The patient is taught to extract with forceps as many hairs as possible daily for weeks or months, and daily he rubs in an antiseptic ointment, such as ung. hydrarg. oleat. 5 per cent. or ung. iodex. But when the whole scalp, as is sometimes the case, or other extensive areas are involved, this treatment is impracticable. For very limited areas, as the eyebrows and upper lip, or imperial, an often completely effectual remedy is the application once or twice weekly of pure carbolic acid, carefully dabbed on with a match stick or very small swab of absorbent wool.

In the treatment of furunculosis, vaccines of staphylococcus may be given in doses of 50 to 150 million weekly. Larger doses are better avoided, as they often lead to over-stimulation and an exacerbation or spread of the infection.

Much ma[illegible]o prevent fresh infections by constant change of linen; by frequent baths (baths of copper sulphate ʒss to 20 gallons); by antiseptic lotions mopped over the whole area involved (lot. hydrarg. biniodidi 1 in 10,000); and by individual attention to each boil. The earliest lesions should be painted over with a drop of pure carbolic acid. Larger boils may be fomented, but they may generally be made to dry up rapidly by the following method: Into the central point of the boil a pointed match stick which has been dipped in pure carbolic is gently inserted. This smarts at first, but the carbolic acid soon numbs the pain. The match stick is again dipped into the carbolic and put more deeply into the boil. It will then be found that an opening has been made and that the pus can be gently squeezed out. A small wad of absorbent wool is now tightly wound round the ends of a fine forceps and dipped into pure carbolic. The carbolic-soaked wad is then used to thoroughly mop out the cavity of the boil, and finally some pure carbolic is painted over the surface of the boil and a piece of dry wool put over it. In twenty-four hours the boil will have almost subsided, and in a day or two it will have disappeared. By diligently attacking every fresh boil in this way we may succeed eventually in stamping out the infection, but disappointment sometimes follows by a recrudescence of crops of boils at a later period.

The treatment of chronic eczematized impetigo of the limbs and trunk, which is so often a sequel of scabies complicated by impetigo contagiosa and not properly treated in the beginning, is even more unsatisfactory than that of a mere furunculosis; for the scratching induced by the itching not only keeps going the eczema, but leads to fresh crops of follicular pustules and boils. Sometimes these chronic eczematoid impetigos yield to an ointment of pyrogallic acid gr. j in ung. zinci oxidi ʒ j, or to applications of small doses of *x* rays. But more often they persist in spite of the treatment, to the despair of the medical officer.

The early recognition and right treatment of the streptococcal impetigos—impetigo contagiosa of Tilbury Fox—is, then, the only sure method for the elimination of these obstinate and often incurable staphylococcal infections which arise as a sequel to the initial and more easily overcome streptococcal infection.

THE TREATMENT OF PSORIASIS BY X-RAYS AND CHLORINE IONIZATION.

By CHARLES E. DE SILVA, M.B., B.S.DURH., M.R.C.S., L.R.C.P.LOND.

CONSIDERING the obstinate, rebellious nature and the chronic and recurrent course of psoriasis, its depressing effect and the despair of the patient are not at all surprising. Nor is his lack of patience, perseverance, and co-operation in carrying out a prolonged, tedious, and disagreeable course of treatment astonishing.

Arsenic is found to be the most valuable and the most constant in its effects. It is the favourite drug given internally in increasing doses for a long period. Its prolonged administration is, however, attended by remote ill effects and dangers, such as gastro-intestinal and nervous disturbances, general pigmentation of the skin, keratosis of the skin (especially the palms and soles), callosities, warts, horny formations, and even cancer. Chrysarobin is the most powerful and generally used local remedy. It stains both the garments and the skin and excites dermatitis of the surrounding skin and severe conjunctivitis if the eyes are touched. It is, besides, a very disagreeable application which necessitates confinement to bed or to the house, and necessarily interferes with the patient's occupation.

In the following case the rapid involution of the eruption, the painless, clean, and agreeable nature of the treatment, which does not interfere with the patient's occupation, and takes up only a few minutes to half an hour a week, and its freedom from remote ill effects and dangers when properly applied, are worthy of attention.

A boy, aged 15 years, of otherwise good general health, in the summer of 1914 presented a dry, scaly, papular eruption on the palms, back of the hands, and webs of the fingers—more on the left side. There was no itching. There was some thickening of the skin of the left palm. With the advent of winter the

eruption was said to have faded away gradually, but the skin of the left palm remained thick, and showed a tendency to scale.

In the spring of 1915 the eruption gradually reappeared in a worse form on both hands. The patches were sharply defined, slightly elevated, thickened, and infiltrated. The dry, scaly, and imbricated papular eruption was growing peripherally. There was marked keratosis of the skin of the left palm. The scales were whitish and greyish. There were no vesicles or pustules. The dryness was very marked even in the fissures of the affected skin. There was no pain, itching, or other subjective symptom. Ointments, intestinal antiseptics, and aperients were given without any benefit. No arsenic was given. *X* rays were applied in September, 1915, with marked benefit. Four mild doses were given at weekly intervals. There was a retrogression of the eruption after the first application of the rays. The lesions yielded quickly to each exposure, and eventually disappeared after the fourth dose, but the skin remained somewhat thick and hard.

The eruption recurred in the spring of 1916. It came on gradually, as in the previous year, almost on the same sites, and was of the same character. Keratosis of the skin of the left palm was well marked. The patches gradually disappeared again after three small doses of *x* rays, given at weekly intervals in August, 1916. A week after the last treatment there was no trace of the eruption, and only a slight pigmentation was left, but the skin of the left hand was not quite soft and normal. Another mild dose of *x* rays was given about a month after the third dose. The condition of the skin improved after this, but it was not quite normal, and treatment was discontinued. No arsenic or internal medicine was given, nor was anything applied locally.

A similar recurrence of the eruption gradually set in in April, 1917, almost on the same sites, and of the same character. The patches on the right hand were larger and the keratosis of the skin of the left palm was more marked. No *x* rays were applied this time. On June 11th chlorine ionization was given to both the hands. Within a week the hyperaemia and scale formation became much less, and the skin was softer and more supple. Some of the fissures healed. The second treatment was given on June 17th. Within the next week all the fissures healed, the scaling was very slight and the skin was much softer. The third treatment was given on July 1st. Within a week the scaling entirely disappeared, and all inflammatory symptoms subsided. Healthy skin was forming in place of the portions that had peeled off. The skin of the left palm was nearly normal. By July 8th there was no trace of the eruption. No pigmentation occurred as under *x*-ray treatment. The skin of the left palm though quite soft was yet a bit thicker than normal. The fourth and last treatment was given on this date.

In this case the lesions were on the palms and back of the hands, which usually escape. There were no patches anywhere else. Keratosis of the skin of the left palm was not due to arsenic, as it was not taken at any time. Another unusual feature was the recurrence in warm weather. Usually the eruption improves markedly in warm weather and gets worse in cold. The beneficial effect of sunlight, the advantages of a permanent transfer to a warm climate, its less common occurrence in warm climates and in exposed parts, have been recognized, and point to seasonal influence as a powerful and important etiological factor.

Autointoxication due to poisons manufactured by the body as the result of defective metabolism, altered gland secretion, or absorption from the alimentary canal owing to defective digestive processes, appears to be the immediate and primary causative factor. The part played by the nervous system seems to be secondary, as does that of pathogenic organisms, to the toxaemia, which poisons and damages the epidermic cells and prepares the "soil" for successful parasitic invasion, as evidenced by the grafting of other lesions on patches of psoriasis.

Chlorine ionization is, I believe, more efficient than *x* rays. It is quick, and has the great advantage that the sittings can be continued as long as it is necessary without any ill effects whatever, whereas the application of *x* rays must necessarily be limited. The dose of *x* rays should be just sufficient to stimulate but not to injure or destroy the skin. Therefore *x*-ray treatment has to be stopped before the involution of the eruption in many cases.

In the local treatment of psoriasis and other diseases the electro-ionic method offers facilities which no other except *x*-ray treatment affords. It allows us to introduce into each cell, impermeable to most remedies, a whole series of ions and to obtain different actions to the desired degree and depth. Ointments, liniments, and lotions act only superficially, and only an infinitesimal fraction can penetrate even into the deeper strata of the epidermis. The skin and the surface of wounds are, with the ordinary means of application, impermeable to powerful alteratives, strong antiseptics and coagulators of albumin, which electrolysis readily introduces to whatever depth one wishes, through the skin and deeper tissues to joints even, and in sufficient quantity to produce the desired effect of stimulation, paralysis of function, or death of tissues.

Local ionic treatment could, with advantage, replace general treatment in many conditions. Medicines introduced into the stomach or subcutaneously enter the circulation, are added to the ions of the organism, and are eliminated after transient action; whereas by electrolytic introduction the ions are substituted for the ions of the organism and are not introduced into the circulation, but into the plasma of the cells which retain the ions for a long time and ensure efficient and lasting action on the tissues, which, moreover, get flooded with blood determined to the part by the vasomotor paralysis induced over the whole surface of introduction, lasting for several days. This action could be kept up by weekly séances.

In *x* rays we have a more powerful weapon, which must, however, be wielded with greater care. The action of *x* rays is doubtless purely local, but as to its precise character there is still much to be learnt. The rays modify the electrical equilibrium of the tissue molecules, bring about chemical changes in the cells, and affect the vascular system. In small doses *x* rays produce at first a passing active hyperaemia, and then a lasting passive hyperaemia, stimulating the nutrition of the tissues, and causing the absorption of inflammatory products. They restore healthy metabolism and exert an antitoxic effect. In large doses their action is destructive. This disintegrating action is usually limited to certain elements of the skin, and is to be carefully avoided, except in a few special cases.

No other treatment can compare with these two most valuable and powerful methods, properly applied, for efficiency, rapidity, perfection of results, and absence of pain, where local treatment is indicated in any morbid condition. Moreover, their application is clean, agreeable, convenient, and cheaper in the long run.

ACIDOSIS AS A POSSIBLE CAUSE OF CERTAIN SYMPTOMS IN DIPHTHERIA.

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If severe cases of diphtheria do not receive antitoxin before the third or fourth day of disease death may occur on the fifth to seventh day from an overwhelming toxaemia with signs of heart failure. In a large number of late cases temporary improvement follows rapidly on administration of serum, the throat cleans, the patient is able to take a fair amount of food, and appears to be convalescent. About the tenth to twelfth day the complexion assumes a slightly dusky pallor, food is refused, and vomiting occurs. The vomit at first consists of food, but later becomes like coffee grounds. The patient vomits five or six times a day whether food or drink is given by the mouth or not. The heart's action becomes weaker and the pulse more feeble by slow degrees, until by the third day of vomiting the pulse is imperceptible at the wrist, the extremities become pale and cold, the urine is greatly diminished in quantity, the face assumes an earthy pallor, the liver may be enlarged, sometimes severe epigastric pain is present, occasionally, in older patients, a fear of impending death is present; the consciousness is maintained to the end, which is preceded by a short convulsion.

In nine years' experience in a large fever hospital I have never seen a case recover in which this condition is established, except one treated in the way to be described. These cases are described in the textbooks as suffering from late heart failure, but, from careful observation, the failure of heart, circulation, and kidneys appears to follow the onset of vomiting. The numerous cases which show feeble heart and circulation after diphtheria usually recover if vomiting is absent, except those which die from acute intoxication in the first few days.

All drugs have proved useless to check the vomiting. The administration of adrenalin, pituitrin, and salines by rectum or subcutaneously, and the stoppage of all food by

mouth slightly prolongs life, but does not stop the vomiting nor preserve the patient.

As certain cases present some features resembling the symptoms described as acidosis due to delayed chloroform poisoning,[1] a trial of the effect of the administration of 30 to 35 grams of sodium bicarbonate a day in 2 per cent. solution, by rectum and subcutaneously, was made on a patient showing this condition. This patient stopped vomiting within twenty-four hours, and after a prolonged convalescence recovered. Encouraged by this result, a daily analysis was made of the total urine of seven of the more serious cases for evidence of acidosis. Examination of total acidity, total N, total NH_3N, relation of NH_3N to total N, the quantity of acetone and oxybutyric acid, was made daily. Of these cases, five recovered without vomiting, two died with vomiting symptoms. In these last two cases there is, unfortunately, a gap in the records between their first admission and the onset of vomiting. The first five cases excreted daily acetone varying from 0.040 gram to 0.622 gram, and oxybutyric acid from nil to 1.1 grams. $\frac{NH_3(N) \times 100}{\text{Total N}}$ varied from 7 to 15 per cent.

The acetone bodies diminished within three days after serum to a mere trace, and $\frac{NH_3(N) \times 100}{\text{Total N}}$ to below normal. The disappearance of acetone bodies took place in spite of the fact that the patients were only having milk; and, in fact, the case showing the highest proportion of these bodies had been having a considerable amount of carbohydrate food in addition before admission, so that their presence was apparently not due to mere starvation. The complete figures for the two vomiting cases are given below.

CASE VI.—The patient, aged 6, was admitted on the third day of disease; antidiphtherial serum, 16,000 units, given. On the tenth day vomiting occurred five times. On the eleventh day the patient was given 36 grams of sodium bicarbonate; there was no vomiting. The following day 16 grams of sodium bicarbonate were given; no vomiting. Death took place on the fourteenth day.

Analysis.

Day of Disease.	Total Urine.	Acidity.*	Total Acetone.	Total Oxybutyric Acid.	Total N.	Total NH_3N.	$\frac{NH_3N}{N}$
	c.cm.		gram	gram	gram	gram	
3-4	526	60	0.026	Nil	2.2	0.21	10%
10-11	250	11	0.028	Nil	2.15	0.01	0.5%
11-12	772	22	0.254	Trace	2.5	0.029	1.9%
12-13	630	22	0.283	Trace	2.7	0.052	2%

*Equivalent to c.cm. N/10 acid per 100 c.cm. urine.

CASE VII.—The patient, aged 7, was admitted on the fourth day of disease; the case was a severe one. Antidiphtherial serum, 20,000 units, was given. Vomiting occurred three times on the ninth day, and also on the tenth; on this day 22 grams of sodium bicarbonate were given. No vomiting took place on the eleventh day; a further dose of sodium bicarbonate, 36 grams, was administered. Death occurred on the thirteenth day.

Analysis.

Day of Disease.	Total Urine.	Acidity.	Total Acetone.	Total Oxybutyric Acid.	Total N.	Total NH_3N.	$\frac{NH_3N}{N}$
	c.cm.		gram	gram	gram	gram	
9-10	510	198	0.51	0.33	3.2	0.45	14%
10-11	360	37	0.41	0	3.3	0.21	7%
11-12	330	37	—	—	—	0.3	—

In Case VI acetone appeared to be washed out of the tissues by the increased urine. In Case VII this was not evident. From all these analyses there is no greater indication of acidosis than is present in many pyrexial conditions, except in the failure of a large amount of soda to render the urine alkaline. In fact, in Case VI the acidity was actually increased by 36 grams of soda. Cushny[2] notes that 12 to 15 grams is sufficient to render an adult's urine alkaline. It is probable that most of the soda is fixed by the proteins of the tissues. The small increase in acetone (from diacetic acid) only accounts for a negligible amount. Considering that a diabetic may excrete up to 10 grams daily[4] of acetone bodies without symptoms, these acids cannot account for the symptoms in diphtheria.

No lactic acid was found in the urine, and in Case VII the Cl as NaCl diminished from 4.5 grams to 2.05 grams between the tenth and eleventh days. The administration of the alkaline liquid rendered the patients oedematous, a condition not seen in those dying naturally with these symptoms, so apparently some of the fluid administered is poured out into the tissues. In each case the soda diminished or stopped the vomiting. The vomit remained as clear fluid and did not become like coffee grounds, and only contained 0.07 per cent. total acids (as HCl) to phenolphthalein.

If there is a real acidosis it might account for the symptoms, as Crile[3] states that acidosis exhausts the adrenals, and the prostration, weakness of the circulation, and vomiting resemble the symptoms caused by adrenal failure in Addison's disease.

These investigations, extending over a year, are published with reluctance, as being very incomplete, but they cannot be completed as I am proceeding on military service, but on the original hypothesis prophylactic measures have been adopted which have given most encouraging results in the prevention of these symptoms. Every severe case coming under treatment late during the past eleven months has been treated at once with 10 to 15 grams of sodium bicarbonate a day for several days in divided doses by the mouth, in addition, of course, to full doses of antitoxin.

The number of cases admitted was 290; 52 were severe late cases (third day or after), and of these 11 died from all causes, including 5 within forty-eight hours of admission, and 3 from bronchopneumonia following laryngeal diphtheria; this leaves only 3 deaths from heart failure. Not one of the whole 290 cases had any vomiting, and many unexpected complete recoveries have taken place. The mixture given is—

Sodium bicarbonate	2 grams
Potassium bicarbonate	0.3 gram
Magnesium carbonate	0.5 ,,
Aq.	ad 30 c.cm.

Every four hours.

It appears to alter the toxic pallor to a more healthy tint, and increases the urinary secretion and diminishes the albuminuria.

Conclusions.

1. Some of the symptoms in vomiting cases of diphtheria may be due to a previous acidosis causing adrenal exhaustion.
2. These symptoms are not prevented by antitoxin if the patient does not receive it by the third or fourth day of disease.
3. The administration of large amounts of alkali to cases showing these symptoms diminishes or stops vomiting, but does not usually save the patient. The administration of 10 to 15 grams of alkali daily for several days from the earliest possible moment, with full doses of antitoxin, appears to prevent the onset of these symptoms.

Analysis.—Methods used: Acidity, neutralization in presence of neutral potassium oxalate and phenolphthalein. NH_3, formalin method. Total N, Kjeldahl's method. Acetone and oxybutyric acid, Shaffer and Mariott. NaCl, by Volhard's method.

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SEVERAL leading physicians of Rio de Janeiro have taken steps for the establishment of model sanatoriums in different regions of Brazil. The first is to be erected among the Italiya hills near the capital.

SURGEON-GENERAL BRAISTED, of the United States navy, in a recent report to Secretary Daniels, states that typhoid fever and other infectious diseases have been practically extinguished in the service by modern methods of prevention. Notwithstanding the vast increase in the personnel since the entry of America into the war fewer than ten cases of enteric have been reported in that period. The only diseases that cause any trouble at present are those due to infection through the respiratory passages, especially mumps and measles; and in all these the death-rate is very low.

A SIMPLE METHOD OF MECHANICAL FIXATION FOR FRACTURE OF LONG BONES.

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The methods commonly employed in the operative treatment of fractures are all more or less laborious, and although the results amply justify the necessary expenditure of time and trouble, it appears to me that the methods of carpentry as exemplified by the use of plates, bolts, and screws, require modification in their application to a surgical problem.

The use of a bone graft may be more strictly surgical, but it is certainly laborious even with electrical saws and similar apparatus at the surgeon's disposal. Simplicity in all operative procedures is greatly to be desired, for, when the technique of an operation is easy, the risks of failure are correspondingly diminished. In the case of broken bones it is also most desirable to have a method of fixation applicable to compound as well as simple fractures, and it is the former which in reality present the more difficult problem. Bone grafting in the presence of sepsis is always doomed to failure, and the use of screws is condemned because they carry infection before them into the substance of the bone, they become loose, and they may soon fail to hold a plate in position. It is generally held also that whilst metal plates applied to fractures tend to delay bony union, their function is fulfilled if they hold the fragments in good anatomical apposition during the healing process. It is urged, on the other hand, that the bone graft promotes bony growth, and therefore hastens union. To my mind, the explanation lies in the fact that the graft is used as a wedge to press bony surfaces together, whereas the plate tends to press itself against the bone, and bone to bone is obviously essential for rapid union.

The bone clip of which I give an illustration is designed to partially encircle the fragments and to press them together and thus favour rapid healing of the breach in bone tissue. It is made of tempered spring steel and the upper half of Fig. 1 shows its application in the case of an oblique fracture, drawn from an actual specimen. In the lower half of the diagram is seen a clip with a metal flange, designed for the treatment of a strictly transverse fracture, secured by means of a second clip. These clips exercise continuous elastic pressure on the fragments of bone within their grasp and the size selected must be proportionate to the size of the bone operated upon. It is not intended that more than two-thirds of the circumference of the bone should be grasped by the clip. The strength of the spring is quite sufficient to counteract laterally acting forces tending to displace the fragments, and the teeth by which the bone is gripped will resist a force acting in its long axis. All that is necessary after the clip is in position, therefore, is sufficient immobilization by splintage to avoid violent movement and no extension need be applied to the limb. A transverse fracture, as I have found from recent experience, can sometimes be quite well secured by a single clip of the ordinary dimensions, or by one which is made especially wide. It is to be admitted that in the case of a true transverse fracture one does not get the ideal pressing together of the raw surfaces of bone, but this merely indicates the need for longer immobilization of the limb before union can be expected. As a matter of fact the fractures which call for mechanical fixation are rarely absolutely transverse.

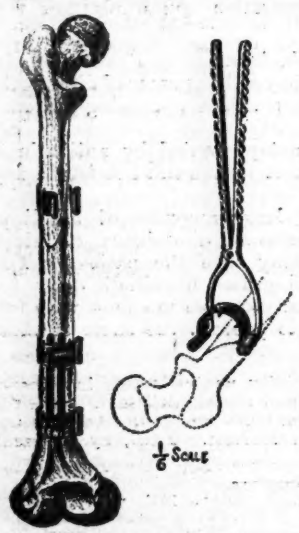

Fig. 1. Fig. 2.

The technique of this method of operating is extremely simple, and the only special instruments required in addition to the clip and the introducer are two pairs of Lane's curved bone retractors.

The steps of the operation are as follows: A linear incision is made down to the seat of injury, the long fragments are identified, and the way in which they require to be fitted so as to obtain perfect apposition is noted. In oblique fractures forcible extension with rotation of one or other fragment is usually satisfactory, but with jagged and irregular bone surfaces protrusion of the ends through the wound and then dovetailing them into position by manipulation is the better plan. The muscles are first retracted by Lane's instruments and pushed out of the way, and then the curved portion is passed over the bone between it and its separated periosteum, this separation being largely the result of the fracture rather than purposely carried out by the surgeon. In this way four retractors are placed in position, one on each aspect of each main fragment, in the same way as a tyre lever is passed between a tyre and the rim of a motor wheel; the two pairs can be pushed away from one another along the bone until a sufficient subperiosteal space is exposed for the application of the clip. The bone ends must then be got into perfect apposition and the clip lifted from the instrument table by passing the prongs of the introducer through the small loops at its ends. Nothing which will be introduced into the wound need be touched even by the gloved hand, and the introducer is made of considerable length so that the clip is easily lifted and opened without coming near the surgeon's hand. The next step consists in passing the open clip round the bone at the seat of fracture and adjusting it until it holds the fragments in a firm grip; it is important not to dislodge the introducer until the best position has been obtained, and then a tap with one of the retractors on the side of this will readily disengage the prongs from the loops of the clip, whose spikes give it a firm hold on the partially encircled bone. The strength of this method of fixation can immediately be tested by moving the limb, and the security of the joint will at once become apparent. The spikes or teeth obviate the need for any screws or nails to affix the clip to the bone, and they leave a small space between the metal and the osseous tissue, so that pressure necrosis is hardly to be feared. Even in the femur of a young child they do not tend to bury themselves in the bone, and thus bring the clip into complete apposition with the bony surface. This is an important point, which has a bearing on the removal of the clip, if this should be called for at a later date.

The accompanying diagram shows the operation completed as far as the bone is concerned.

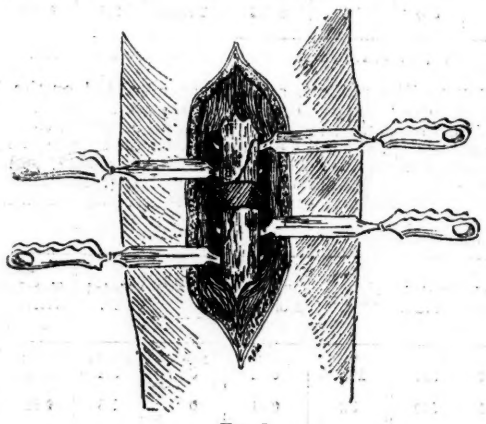

Fig. 3.

Since I first described this method of operating on fractures[1] I have gained further experience of its value and am convinced of its suitability in a large number of compound fractures and even gunshot wounds, provided that the treatment is adopted at the outset. I have recently operated on about six cases of simple fracture of the femur at the East London Hospital for Children, and the results have been most gratifying, for in all but one perfect results, functional and anatomical, were obtained in about four weeks, with no shortening. In the exceptional case I have to admit that suppuration occurred, and this has delayed union by a few weeks, and has, up to the date of

writing, caused difficulty in securing movement at the knee-joint, but it has not affected the satisfactory alignment of the femur, and the experience gained by what I admit to be due to some error of technique has emboldened me to extend the use of the clip to the treatment of compound fractures. I may add that this case was a T-shaped fracture at the lower end of the femur, which is a type notoriously difficult of treatment. By frequent examination of these cases I have found that the presence of suppuration appears to double the time for firm union to take place, and in this particular case the bone was solidly united at the end of four weeks, whereas in all the others no rocking at the site of fracture could be obtained a fortnight after operation. Naturally the amount of callus formed in compound fractures is excessive and the healing that one obtains is of the "third degree," comparable to that seen in a septic wound of soft tissues. In the process of healing by first intention of a superficial wound the amount of granulation tissue is limited to the line of the scar, but this result is only secured by accurate apposition of the edges of the wound, which, by suture, are actually pressed together, and I claim that by the use of such elastic pressure as is provided by my bone clip a similar result is achieved, and healing of the fracture occurs by first intention by proliferation of bone cells and not by ossification of callus. It is well known that where there is perfect apposition of the fractured surfaces there is little or no callus formation, but it appears to me that we have been too long content with secondary union of bone, and that in all probability the period of healing in a fracture can be very materially reduced in many cases by operative treatment.

While admitting that these clips naturally fit best over bones with a circular contour, such as the femur, I have found them of considerable service in fractures of the tibia and have used them for difficult oblique fractures which could not be reduced by manipulation. In a recent compound fracture of the tibia, which failed to unite after several weeks' treatment by splintage and the use of a Steinmann's pin to secure extension of the lower fragment, the clip was successfully applied, and was removed at the end of about four weeks, when solid union had been secured, and the small granulating wound which had been present healed rapidly. As to the removal of these clips, I have devised no special instrument for the purpose, but I have had the introducer made in two pieces, so that each prong can be inserted in one of the loops and the instrument locked in a similar way to that in which midwifery forceps are applied. As a matter of experience, however, it is difficult to find these loops without opening up the wound considerably, and I have found that the point of one of the Lane retractors can be used as a lever to lift up the spring and dislodge it from the bone. Except in the case of compound fractures, of course, their removal will seldom be required.

In considering their applicability to the treatment of compound fractures, I wish to lay emphasis on the fact that no screws are required, and therefore there is no penetration of even the cortex of the bone, and very little stripping up of the periosteum is needed to secure a sufficient area of bone for the adjustment of the clip. When once they are placed in good position they grip surprisingly firmly by their small teeth; they act automatically in the case of oblique fractures in securing firm contact of the bony surfaces and withstanding displacement of the fractured ends. As I have already mentioned, the introducer should not be removed until perfect apposition and security have been obtained. I have recently employed one of the flanged clips in the case of a transverse fracture of the femur in a child, the flange being secured to the upper fragment with a clip having no teeth, and have been agreeably surprised by the firm hold obtained, seeing that the operation was not done until three weeks after the injury, when there was already some union in bad position with an inch overlap.

The most important, and unfortunately the commonest, type of compound fracture with which one has to deal at the present time is that due to gunshot wound, and I am convinced that these clips are worthy of trial in cases of this type, selected with due reference to the accessibility of the bone ends, if applied within a short time of the receipt of the wound. They are not open to the same objections as Lane's plates, in that they are not likely to carry infection before them and produce extensive osteitis. In my experience, they are calculated to hasten the repair of the fractured surfaces even in the presence of infection, and I do not think that the treatment of the wound by Carrel's or similar methods would in any way militate against their efficiency as an internal splint. That such an internal splintage for the treatment of gunshot wounds of the femur and the bones of the upper extremity is desirable must be obvious to any one who has had to do with the compound fractures of the present war with their tendency to angular deformity, their shortening, and the disability of adjacent joints due at the same time to the necessity for prolonged splintage and the imperfection of every kind of external splint. It is idle to deny that these splints all possess drawbacks, and the simple explanation of their inefficiency is that we do not obtain sufficiently rapid union of the bone, but if care is exercised in the selection of cases and such clips are applied at the first dressing under anaesthesia, I believe our end results can be improved. Oblique fractures are obviously most amenable to this method of fixation, but I do not think the existence of comminution is any bar to success, and this type of fracture is much more common than the transverse. When there is a considerable gap in the bone some form of external extension apparatus is clearly required if the normal length of the limb is to be retained, and clips are not suitable. In compound fractures they should be removed as soon as the bone is solid enough, for otherwise they might be the cause of a persistent sinus.

The necessary apparatus has been made for me by Messrs. Lewis and Sons, Westmoreland Street, W.1, and one introducer suffices for all sizes of clips, since the prongs can be separated from contact up to three inches. The clips are made of spring steel in diameters ranging from half an inch to one and a half inches with quarter-inch increments. Those suitable for oblique fractures are provided with teeth turned over from the edge by which they grip the cortex of the bone, but I have found that in the case of the flanged clip for transverse fractures the flange is best held in contact with the bone by a clip without teeth so that it rests close against the bony cortex, after passing over the steel flanges. It is desirable always to use the smallest clips which will embrace the bone so as to secure the maximum degree of elastic pressure, and, at present, they are made of the lightest steel which will stand the necessary strain. It is desirable to open the clips with the introducer slowly and gently since with all their tempering they are apt to be slightly brittle.

Owing to difficulty in producing skiagrams satisfactorily at the present time, I regret that I am unable to illustrate this article with examples of cases operated upon, but I hope to do so at a later date. One of the satisfactory features of the operation is that in a straightforward case of simple fracture it can all be done easily in half an hour. In applying them to compound fractures where the bony surfaces lie already exposed in the wound the necessary steps would only add a few minutes to the length of the operative procedure.

REFERENCE.
[1] *Lancet*, May 12th, 1917, p. 725.

ACCORDING to a statement recently made by the New York State Department of Health, during the first nine months of 1917 motor cars caused 775 deaths in that State, being more than the number due to typhoid and scarlet fever taken together. In September such accidents were responsible for 155 deaths, more than the combined mortality from murder and suicide. The number of deaths caused by motor cars exceeds the number for the corresponding period of any previous year.

SWITZERLAND is believed to be one of the countries most afflicted with cancer. The Association Suisse pour la Lutte contre le Cancer has undertaken to collect statistical and clinical notes as to the most frequent localizations of the disease. Cancer of the breast, the increase of which is particularly notable, has been chosen as the first subject for investigation. The inquiry will be directed to the influence of lactation, inflammatory affections, and the pre-existence of mastitis, fibro-adenoma, and cysts, and of operation on prognosis in general and the formation of metastases in particular. Other points are the value of *x*-ray, radio-active, and other methods of treatment. All practitioners in Switzerland are invited to supply information as to cases treated by them from 1911 to the end of 1915. A special appeal for help in the inquiry is made to the surgical staff of hospitals and to pathological institutes.

Lectures
ON
THE ANATOMICAL AND PHYSIOLOGICAL PRINCIPLES UNDERLYING THE TREATMENT OF INJURIES TO MUSCLES, BONES, AND JOINTS.

GIVEN AT THE ROYAL COLLEGE OF SURGEONS OF ENGLAND, NOVEMBER–DECEMBER, 1917.

BY
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V. THE BEARINGS OF MARSHALL HALL'S DISCOVERIES ON ORTHOPAEDIC PRACTICE.

WHEN Marshall Hall first announced his discovery of reflex action, at a November meeting of the Zoological Society of London in 1832, he was a man of 42, a consulting physician with a considerable practice in London. He was born of a Saxon Midland stock—with an infusion of that hybrid strain which reached England through Normandy. His father was a cotton spinner and bleacher near Nottingham, the first in England to use chlorine for bleaching cotton. Marshall, at the age of 15, was apprenticed to a chemist or druggist in Newark, but in 1809, four years later, he became a medical student at Edinburgh, where he spent five years, three as a student and two as a resident in the Infirmary. After two years as a physician in Bridgwater and eight in Nottingham, he settled in London in 1826.

In the course of experiments on the circulation in capillaries he made a chance observation which directed his attention to the nature of the functions of the spinal cord. He had cut off the tail of a salamander, and happening to touch its skin observed that there was a quick movement in response. That response Marshall's predecessors had often seen happen, but it immediately excited his attention because it was taught in his time that a muscle could be stimulated to action in three ways only—either by touching or stimulating it directly, or by stimulating the nerve, or by a volitional stimulus from the brain. He knew that the movement he had evoked in the salamander's tail was due to none of these three causes; there must be a fourth way of calling muscles into action, and, as was his wont with exceptional cases, he followed up the clue. He destroyed the part of the spinal cord which lay in the detached tail, and found, on touching the skin, no movement could be elicited by touching the skin. He thus was led to suspect that in the spinal cord there resides a power, or mechanism, for the production of such movements as he had witnessed in the salamander's tail. To test his guess he took a snake and cut its spinal cord across, just behind the head, thus separating the brain, the recognized centre of muscular machinery, from the body. The snake remained perfectly still until he touched it, or a puff of wind struck it, or until the table was struck on which it lay, and then the snake moved and kept moving until he wrapped it in cotton-wool and thus brought it to a standstill by protecting it from all external stimuli; so soon as it was brought to a standstill and its skin was protected all movements ceased. He then cut off the head of a turtle, and found that on touching the nose, which he knew from Bell's teaching to be a respiratory area, the floor of the mouth executed the respiratory movements which occur in one phase of breathing in turtles, but that when he destroyed the medulla oblongata, he could no longer elicit the respiratory act. He concluded that when the nose was stimulated by touch, a message was carried to the medulla by the fifth nerve, and therein a centre excited another message which was reflected along the motor nerves which control the muscles of the mouth and throat. He pictured in his mind an arc of nerves, and recognized that a stimulus was necessary to produce the reflected or reflex muscular act.

He then exposed the spinal cord of the headless turtle; he touched the spinal cord with a needle: the limbs were thrown into movements; messages, he concluded, must have been excited which had passed up and down the cord and been reflected to the muscles of the limbs. He touched the posterior roots of a fore and then of a hind limb: the limbs were thrown into movements; he exposed and touched nerves exposed in the trunk: movements of the limbs and body followed. He touched the skin of the trunk and of the limbs, and with each prick found that the movements evoked by stimulation of the skin were more vigorous than those which followed stimulation of nerves, the nerve roots, or even the cord itself; evidently the skin was the chief end-station for evoking such movements. He noted, in the headless turtle, that the sphincter of the anus retained its normal tonic power and function, but when he destroyed the hinder part of the spinal cord all tone and contraction disappeared from the sphincter. The power or mechanism which regulated the tonus or function of a sphincter was clearly resident in the spinal cord. On pricking the headless turtle he could evoke movements in the limbs; it was also clear that in the spinal cord there was resident a mechanism which could time and regulate the contraction of muscles. And lastly and for our present purpose he made a most important observation—when he removed the spinal cord from the headless turtle the limbs became limp, all tone and degree of contraction disappeared from the muscles of the limbs. That passive contracture of muscles which can work such dire deformities in diseased joints was, on Marshall Hall's showing, to be traced to a disordered function of the spinal cord. The spinal cord regulated the balance of the limb muscles and determined the posture of joints.

Marshall Hall was elected a Fellow of the Royal Society in 1832, and on June 20th, 1833, he read to it his paper "On the reflex function of the medulla oblongata and medulla spinalis," in which he demonstrated the existence in these parts of "a principle of action not hitherto distinguished with sufficient precision." We have to remember that in 1833 knowledge of the finer structure of the central nervous system was crude and imperfect; yet he pictured an arc system, and grasped the full bearing of his discovery on the realm of medicine and biology. He had an instinct for signpost facts and critical experiments. He saw that the reflex function of the cord and medulla could be exalted—by opium in the frog and strychnine in the mammal; that the manifestations of tetanus and hydrophobia received a rational explanation for the first time. Asthma and epilepsy he also wished to bring within the scope of his reflex law. The excito-motor or reflex function of the spinal cord he found to be more easily excited in the young than in the old; if a teat touched the lips or a finger pressed the palm of a newly born child, it was grasped by lips or fingers. The anencephalic human fetus he regarded as a purely reflex mechanism. He observed how all the entrances and passages at the front end of the body, all the muscles and operations connected with the entrance of food and breath, were presided over and manipulated by his systems of reflex arcs. The action of the canals and muscles at the hinder end of the body were regulated by a similar system; defaecation, micturition, parturition were reflexly controlled acts. He found he could elicit such acts by stimulating the mucous linings of these canals; tenesmus, strangury, renal and biliary colic, the localized contractions of the belly wall, and the manifestation of sympathetic pains which accompanied diseases or disorders of the intestinal tract were all brought by him within the scope of his new law. He found that reflexes could be set up by stimulation of the dura mater, pleura, and peritoneum; the muscular disturbances which may attend the eruption of teeth or the presence of worms in the rectum could be explained on his newly discovered system of reflex arcs. His conclusions, which most concern us now, relate to the muscles of the limbs; they, too, were controlled by the action of stimuli speeding along his postulated system of reflex arcs. Stimuli which arose in the moving limb were carried to the spinal cord by "incident" or excitor nerves, and were there "reflected" along the outgoing or motor nerves to the muscles. Each contact of the foot with the ground he supposed to call forth a new series of movements. At first he believed that the "tone" of muscles was also a true reflex manifestation, but later he regarded the tone of muscles as a function of the cord, manifested independently of the arrival of peripheral stimuli.

Marshall Hall as a physician desired to be Nature's servant—a sincere and outspoken servant if not a very humble one. "I am persuaded," he said, "that a knowledge of the healthy body action is the only foundation for

practical medicine and the only remedy for quackery." "A mere practical man is a quack" was one of his aphorisms, yet there never was a man so misconstrued as Marshall Hall was by his contemporaries. The blame is not to be saddled altogether on them, for he had an unconscious art of rousing antagonism, jealousy, and mistrust. We can hardly wonder that John Hilton preferred to think of nerve trunks than of spinal centres as the functional elements which presided over the muscular system of the body. Neither he nor the line of surgeons which followed him perceived that Marshall Hall had given a new basis for the diagnosis of all disordered actions of muscles, and a sure principle in which a rational means of treatment could be based for the recovery of deformed and disabled limbs. Nay, I would go further. The full bearings of Marshall Hall's discoveries, and particularly the significance of the further investigations made by those who have so brilliantly explored the field which he had opened, have not yet been fully utilized by modern orthopaedic surgeons. Marshall Hall made it impossible for us to think any longer in the terms of single muscles, bones, and joints. All of them in the living state are combined into a functional whole by the spinal cord and its system of reflex arcs.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

STERILIZATION OF THE THROAT AFTER DIPHTHERIA AND IN CARRIER CASES.

THE detention of diphtheria carriers and of convalescents who continue to harbour the bacillus is irksome to those isolated, and must in the aggregate involve a considerable expenditure of money both in civil and military practice. In the BRITISH MEDICAL JOURNAL of March 11th, 1916 (p. 374), Dr. W. S. Thacker reported on the effect of painting the tonsils and nasopharynx with strong solutions of silver nitrate, his work being restricted, I gather, to carriers. He used a 50 per cent. solution, and two applications procured sterility in every case. A 90 per cent. solution was employed for the staff, and one painting then sufficed, the throat being cocainized beforehand. Used in these strengths the solution has been known to cause severe spasm of the glottis, when it has happened to reach the rima.

At the beginning of August, 1917, we began to use silver nitrate on patients in the Plaistow Hospital positive to the culture test after an acute attack of diphtheria, when otherwise nearly fit to go home. As most of our patients are children, we decided to try the effect of weaker solutions. The first painting was done with a 1 in 8 (12.5 per cent.) solution. Where this did not secure sterility a second painting was done with a 1 in 4 (25 per cent. solution). In four cases this proved insufficient and further painting was needed. These were all children with enlarged tonsils and adenoids. Three of them struggled, so that the solution could not be effectively used. In these cases the throat was thereafter painted under ethyl chloride as a general anaesthetic.

Throat cultures were taken on the third and fifth days after the application. The first culture was positive in three cases only. These were children with large irregular tonsils and masses of adenoids. In fact, it was only in cases of this type that there was any trouble in obtaining sterility, a consequence, no doubt, of difficulty in reaching every depression and irregularity. The cases treated yielded on culture the three types of Klebs-Loeffler bacilli, alone or mixed. Our results do not show that any one of these types is more persistent than the others.

Procedure.

The child was rolled in a blanket so that it could not get its arms free, and laid across the bed with its head in the operator's lap. This position prevented any excess of the solution running down the throat. A strip of cotton-wool wound round long sinus forceps was used for the application with 30 to 40 minims of the solution. The tongue was depressed and the tonsils and posterior pharyngeal wall swabbed somewhat firmly with the silver nitrate. It was found advisable to keep the patient without food for two to three hours beforehand. The only case in which laryngeal spasm occurred was a girl who had had a meal shortly before the throat was painted. Of the first forty cases treated twenty-eight were sterilized by one application, eight cases by two paintings, and the remaining four cases needed further treatment as described above.

Conclusions.—Of cases with positive cultures after an acute attack of diphtheria 70 per cent. were rendered sterile by one application of a 12.5 solution of silver nitrate. A further 20 per cent. were sterilized by a second painting with a 25 per cent. solution. The remaining 10 per cent. were more resistant but could nevertheless be sterilized with silver nitrate in solutions not stronger than 25 per cent. with a little patience.

On the whole Dr. Thacker's method of sterilization marks a greatly needed advance on the preventive side, and it is to be hoped that its adoption in other contagious diseases than diphtheria will prove useful. In practice its efficacy plainly depends on the thoroughness with which the silver nitrate solution is applied over the entire surface of the mucous membrane.

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VINCENT'S ANGINA.

HAVING recently taken swabs from numerous cases of Vincent's angina, and having read various short articles on the prevalence of the condition both amongst our overseas troops and amongst the home service units, we are surprised to find no mention of the condition of the gums in this infection. In several cases the throat has cleared up in eight to ten days, while the organisms have easily been demonstrable in pus around the teeth; and, vice versa, in more than one case the patient has come up for a sore throat (? Vincent's angina), and we have found the organism in peridental pus in great quantity whenever a swab from the tonsil has been indeterminate.

There seems to be no doubt that it is of the highest importance to look for pyorrhoea or other dental trouble in every case of sore throat, as a diagnosis may often be made in cases where nothing is obtained in direct tonsillar smears.

Moreover, no patient who has been under treatment for Vincent's angina should be discharged until it is shown that swabs from around the teeth are negative. We have swabbed several cases of pyorrhoea and several normal throats, and although fusiform bacilli and spirillar forms are occasionally seen, we are satisfied that Vincent's angina can be readily diagnosed from direct smears of the gums and throat, and that no other condition ordinarily met with presents the same microscopic picture.

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WOUND INFECTION.

EVEN at the risk of the accusation of repetition I consider it my duty, in present circumstances, to draw further attention to the excellent results which may be obtained in desperate compound comminuted fractures and other grave septic wounds by the prompt administration of ether, application of a tourniquet, deliberate exposure, and obliteration of pockets and sinuses by large incisions, complete removal of foreign bodies (including denuded infected fragments of bone), thorough tunnel gravity drainage, efficient haemostasis, frequent irrigation with hot peroxide lotion (60 to 120 c.cm. to litre), followed immediately by hot carbolic lotion (15 c.cm. to litre), hot mercury perchloride (1 in 2,000) fomentations (wrung dry before application), and absolute rest on a suitable splint until the wound is healed, with extension when necessary. To this should be added, whenever possible, permanent outdoor treatment, which is infinitely preferable to any indoor "primrose sunlight" illusion, and a liberal allowance of wine, stout, or beer with meals.

As far as my personal experience is concerned I have yet to find the equal of the above combination of surgical principles with what, in my opinion, are the best of all

antiseptics, so long as the latter are not used in a strength to destroy friend and foe alike; and their action is considerably enhanced by heat (fomentation) to the part and complete rest to the limb.

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DISLOCATION OF BOTH HIPS WITHOUT FRACTURE OF PELVIS.

J. G., a miner, aged 42, when in a stooping position was knocked down by a fall of stone. When examined it was found that his left leg was flexed, adducted, and internally rotated, and the right leg flexed, abducted, and externally rotated. Both dislocations were easily reduced under an anaesthetic. Stimson in his book says that thirty cases have been reported. Usually the dislocation is not the same on both sides.

Durham. ARTHUR PAIN, M.R.C.S., L.R.C.P.

Reports of Societies.

ELECTRO-PHYSIOLOGICAL PHENOMENA.

A MEETING of the Electro-Therapeutical Section of the Royal Society of Medicine was held on December 21st, 1917, when Mr. A. E. BAINES read a paper on *The Interpretation of Certain Electro-Physiological Phenomena.* Replying to Professor Bayliss's criticism[1] of a book partly written by him, he explained that certain statements said to embrace the chief errors underlying the thesis were made by Dr. Bowman of Manchester and not by him. Other essential points in the criticism were that the currents led off from various points of the body by metallic electrodes were due to the inequality of the electrodes and to difference in the activity of the skin glands; that nerve leaks were merely places at which the skin was moist; and that the di-electric bearing his name did not appear to be different from some kinds of medicinal paraffin.

In refutation Mr. Baines stated that in taking a hand-to-hand galvanometric deflection the sign of current was always changed when the hands were crossed, showing that difference of polarity was in the hands and not in the electrode; that unless both hands were used the contact of skin and metal did not exhibit electrical action, and that as the thumbs were electrically, as well as anatomically, in opposition to the fingers of the same hand no current would pass if the electrodes were placed between the first and second and third and fourth fingers of the same hand, but that a current passed when the thumb made contact and established a potential difference by reason of its higher and opposite electrification. He also referred to the experiments of Dr. C. N. Longridge, published in the BRITISH MEDICAL JOURNAL of May 20th, 1916, and instanced the fact that whereas in neurasthenia, where the hands were moist and the deflection small and of uncertain sign, there was always a large and rapid excursion of the light from a dry hot skin in local pyrexia. Upon the question of paraffin, he claimed that the use of a rock oil was clearly indicated by an electro-pathological study of local pyrexia. Clerk-Maxwell and Sir Oliver Lodge had told them, he said, that light is an electro-magnetic disturbance of the ether and optics a branch of electricity. Progressing from the red to the violet end of the spectrum, there must be a rapid increase in the potential of light, and a discharge of electricity of ever-increasing intensity. In the early days of experimentation with a mineral oil of correct viscosity there had been many failures, and he had found that when exposed to direct sunlight or ultra-violet rays there was a distinct falling off in its therapeutic value. His process was designed to remedy that defect, and since the oil had been standardized there had been no failures that could not be ascribed to faulty diagnosis. If objection were taken to the process on the ground that it was secret, he said that the paraffin prescribed by the medical profession for constipation had always been refined by secret processes.

[1] BRITISH MEDICAL JOURNAL, March 24th, 1917, p. 387.

Reviews.

ON WRITING WITH THE LEFT HAND.

THE author of this treatise[1] aims at providing a practical method of left-hand writing for the use of the mutilated, the subjects of cramp or paralysis, and the left-handed. The work is of interest at this moment when so many men, as a result of the war, have lost the right hand. Professor D'URSO enters at some length upon a discussion of the *rationale* of the process of handwriting, especially as regards the direction of the writing with reference to the position of the body and of the pen. He gives some ingenious diagrams, which he maintains are based upon sound physiological and geometrical grounds. A scheme for the right hand having been constructed, he proceeds to show what must of necessity be the scheme for left-hand writing, if the one limb be regarded as the counterpart of the other. He shows also that the direction of the writing with reference to the axis of the body is varied according to the obliquity of the letters. The practical outcome of the discourse is as follows.

In learning to write with the left hand the pupil should commence by writing the various letters on a blackboard with chalk, standing. He should commence with letters 8 cm. in height, then form letters of 4 cm. and finally those of 2 cm. The larger letters will be written from the shoulder and elbow, the wrist and fingers being almost immobile. He should then proceed to write on paper, the paper being placed on a horizontal table. He should commence with letters 4 mm. in height, and then follow with letters of 2 mm. At first a pencil should be used, and, after some proficiency is obtained, a pen. The exercises are no other than those that are to be found in any English child's copybook. The "hand" adopted is *la scrittura corsiva*, or running hand, the letters of which are inclined at an angle of 45 degrees. Little attempt should be made to distinguish the heavy down stroke from the lighter up stroke. The paper should be smooth and ruled in faint lines. At first the pupil may trace over already pencilled letters. The pupil should not go over his writing twice nor retouch letters after they are made. The paper should be fixed in position by means of a paper weight. The light should fall from the right-hand side. The nib used must be fine and flexible, and with a median point. The pen-holder should be slender and light. The writing should be as light as possible. It is a common error to grip the pen too firmly, and to press too heavily on the paper. The pen should be lifted from the paper as seldom as possible. The writing must never be hurried, nor persisted in for longer than one hour at a time.

The pen is held in the left hand precisely as it is held in the right—that is, between the index finger and the thumb. The pen should rest upon the base of the index and be in a line with the forearm. It will be noticed that while the finer movements of the pen are controlled in the right hand by the index finger, in the left they are rather influenced by the thumb.

The most important feature in the author's method is position. The writer must sit square to the table, bolt upright, with his chest to the table's edge. He must resist the inevitable tendency to lean to the right. The whole of the forearm should rest on the table, the elbow being at the edge of the table. The paper should be so turned that the lines to be written on are vertical, as viewed by the writer, and not horizontal; that is to say, the lines should be at right angles to the edge of the table; the top of the page will therefore be on the right-hand side of the pupil and the bottom on his left. The left-handed man, in fact, should write vertically from above downwards, and not horizontally from left to right, as is the practice when the right hand is used. The pen is held at right angles to the lines. The paper, it is needless to say, is flat on the table, but the writing is at right angles to the edge of the table and not parallel with it. Any one who attempts left-hand writing will experience at once the convenience of writing vertically.

FREDERICK TREVES.

[1] *La Scrittura con la sinistra. Metodo ad uso dei mutilati, dei malati di crampo, dei paralizzati, dei mancini, ecc.* By Professor Nicola D'Urso. Rome. 1917. La Federazione Nazionale. (Lire 1.50.)

ACIDOSIS.

THE conception of acidosis, which may be defined as the depletion of the blood and other tissues of the body in fixed bases, actually dates from 1850, but has only become generally recognized by medical practitioners comparatively recently and almost exclusively in one manifestation—namely, carbohydrate acidosis as seen in diabetes.[2] The blood plasma is kept uniformly alkaline by the intake of fixed bases in the food, the elimination of CO_2 by the lungs and of acid by the kidneys, and by the neutralization of acids in the body by ammonia. In well-marked acidosis the carbonates of the blood become depleted, CO_2 accumulates in the tissues, and although oxygen is carried by the arterial blood the tissues are unable to make use of it, there is no cyanosis, the venous blood is arterial in colour, and, as death occurs before there is any significant change in the reaction of the blood, acidaemia is an unfortunate term. Acetone bodies in the urine appear in carbohydrate acidosis only.

The recognition of other forms of acidosis is an important advance. They occur in renal disease, in advanced hepatic cirrhosis, in cholera, and in food poisoning in children. Acidosis does not occur in parenchymatous nephritis or in the early stages of the chronic interstitial or the arteriosclerotic forms, but it appears in the later course of granular kidney, becoming prominent in uraemia, and is present in the uraemia of acute nephritis. In the renal form of acidosis there are no abnormal acids or excess of ammonia in the urine, but the amount of inorganic phosphates in the blood is increased and convulsions appear to be connected with the deficiency of calcium in the blood. Dr. SELLARDS has specially studied the acidosis of cholera and points out that it is intermediate between the carbohydrate and renal forms, as there is an increase of ammonia but no acetone bodies in the urine. The injection of massive doses of sodium bicarbonate during the collapse of cholera prevents the subsequent appearance of uraemia. It is of interest to note that there is no evidence that the hypothetical opposite condition of "alkalosis" occurs spontaneously in man or in animals, though after parathyroidectomy "alkalosis" appears before the onset of tetany, and benefit results from the administration of acids. This monograph conveys a broad view of acidosis, and in a very compact form contains a great deal of information which will be new to most medical practitioners.

ELECTRO-DIAGNOSIS IN WAR.

IN the greatly extended field of neurology due to the war electrical testing by its precise, almost mathematically exact, results greatly adds to the accuracy of diagnosis and prognosis; thus, in a doubtful case the partial reaction of degeneration points to compression or some other curable lesion of the nerve, whereas the complete reaction of degeneration shows that the continuity of the nerve has been severed; again, the report of the electrical reactions may decide whether or not there is an organic lesion underlying functional manifestations. The editors of the Collection Horizon have therefore been well advised to include in it a volume on electro-diagnosis,[3] giving an up-to-date account of the applications, results, and limitations of the subject. The authors, Professor ZIMMERN and M. PÉROL, after a description of methods, illustrated by forty-four figures, devote a chapter to the abnormal reactions among which that of degeneration naturally receives the fullest attention. The diagnosis of motor paralysis and sensory disturbances is then discussed; in muscular atrophy secondary to arthritis the electrical reactions are exclusively in the direction of quantitative modifications of irritability, and the reaction of degeneration never occurs; so in atrophy about the shoulder-joint after injury the reaction of degeneration points to neuritis or compression of the circumflex nerve, or to radiculitis. The altered reactions in ischaemic paralysis, though sometimes referred to anaemia, are, the authors consider, more logically explained as due to neuritic and muscular changes, or to compression of the nerve filaments by fibrous tissue. An interesting account of voltaic vertigo as a vestibular test is accompanied by explanatory figures. Like the other volumes of this series, this can be recommended for its practical utility.

[2] *The Principles of Acidosis, and Clinical Methods for its Study.* By Andrew Watson Sellards, Associate in Harvard Medical School, Department of Tropical Medicine. Cambridge: Harvard University Press. 1917. (Demy 8vo, pp. vi + 117. 1 dollar.)

[3] *Électrodiagnostic du guerre.* Par A. Zimmern, Professor Agrégé, et P. Pérol. (Collection Horizon.) Paris: Masson et Cie. 1917. (8vo, 155 pages; 44 figures. Fr. 4.)

GUNSHOT FRACTURES OF THE ORBIT.

M. FÉLIX LAGRANGE has contributed a volume on gunshot fractures of the orbit[4] to the Collection Horizon. After a comprehensive historical survey of the subject and a description of the anatomy and functions of the orbit, he analyses the 609 cases on which his monograph is founded. Sight was destroyed in 34.5 per cent. of his cases, due to such lesions as detached retina, chorio-retinitis, atrophy of the optic nerve, haemorrhage into the vitreous, retrobulbar neuritis, cataract, or dislocation of the lens. He found that 18 per cent. of the cases were complicated with lesions of the maxillary antrum and 5 per cent. with injury of the frontal sinus. He calls attention to the fact that these lesions of the eye may occur when neither the projectile nor detached bony fragments have touched the globe. Partial rupture of the sclera, which, according to the theory of the "equator of depression," might be expected, does not occur. If the eyeball is struck by a large fragment of metal it is crushed and entirely destroyed; where the fragment is small it may penetrate the globe. Scleral rupture in the intercalary region rarely or never occurs. As to the treatment of sympathetic ophthalmia, the author is on the side of those who favour enucleation, but makes, of course, certain exceptions. M. Lagrange lays down the following principles in the treatment of gunshot wounds of the orbital region: (1) The eyelids must be replaced in their proper position and as far as possible in their normal form. (2) The conjunctival culs-de-sacs must be restored so that they may be capable of holding the artificial eye. (3) The external form of the orbit must be re-established as nearly as possible by filling up the osseous gaps. For this purpose metallic plates, or preferably fatty or cartilaginous grafts, are employed. The grafts are taken from the patient, either from the buttock when adipose tissue only is required, or from the costal cartilage when cartilage is wanted in addition. The treatise deals in a comprehensive way with a somewhat limited branch of war surgery, which perhaps has not received all the attention it deserves.

THE GENTLE ART OF GROWING OLD.

THE later years of life are too often beset with major or minor troubles of which youth knows nothing, but with all its drawbacks and deprivations, old folks as a rule desire to cling to life so long as they can enjoy it.

How to make the most of one's life and at the same time to prolong it as far as possible should be the study of all persons of both sexes. To point out the road by which a healthy old age may be reached has been the task of many writers from Cicero downwards. A small work from the pen of Dr. BODLEY SCOTT[5] has recently appeared in which the subject is discussed in terms at once graceful, sympathetic, and informative. The writer, who has already given evidence in a previous work of careful study of the conditions that are favourable to longevity, is able to pass most of them in review from the standpoint of personal experience.

The idea that life must pursue a downhill course after the period of maturity is passed, and that disease and decay must needs follow, is altogether repudiated. Although growth may have ceased, the fruit of experience is ripening, and can be maintained in good condition for the benefit of others, if only the physical organism can be protected from those risks of injury or degeneration to which all persons of advanced age are liable. In the earlier chapters the mental, rather than the physical, conditions are discussed, over which the individual has more or less control. A large proportion of the errors of conduct which lead to an unlovable old age are easily to be avoided, if certain habits are recognized and corrected in time.

[4] *Les fractures de l'orbite par projectiles de guerre.* By M. Félix Lagrange. Paris: Masson et Cie. 1917. (Pp. 214, with 83 illustrations. Fr. 4.)

[5] *The Road to a Healthy Old Age.* By T. Bodley Scott, M.R.C.S.Eng., L.R.C.P.Ed. London: T. Fisher Unwin, Limited. 1917. (Cr 8vo. pp. 190. 4s. 6d. net.)

The question of food enters largely into the scheme of physical well-being, and the possession of sound digestive and assimilative power is a prime factor in the attainment of a healthy old age. Errors of quantity as well as of quality of food are apt to be cumulative in their effects, and only manifest themselves when irreparable mischief has been done. In spite of such errors in early life there may be good health at maturity, but as years advance more rational methods have to be adopted. By comparison with the life periods of certain animals, the writer concludes that human life should be prolonged to ninety years. In the later chapters the causes of premature senility are closely examined, especially with reference to cardiac and vascular degeneration.

We can cordially commend this work to readers of advancing years, whether medical or lay. To the former it presents an old subject in a new way, and to the latter will convey some very wholesome material for thought.

THE CAUSATION OF SEX IN MAN.

Some thirty years ago Dr. E. Rumley Dawson began to study the vexed question of the causation of sex in man. At the end of the year 1900 he propounded an original and simple theory of the subject. He holds that the sex of the child depends solely upon which ovary supplies the ovum fertilized. If the ovum comes from the right ovary, the child is a boy; if from the left, a girl. The father has no influence in determining the sex of the future child, nor have any of the countless old and new recipes for the production of a child of a specified sex. This theory has all the attraction of extreme simplicity, and in the second edition of his book[6] on the subject Dr. Dawson has collected a great deal of evidence to prove its correctness, both from his own experience and from gynaecological literature. He also devotes a chapter to rebutting the evidence brought forward by various writers to disprove his theory.

Another chapter is given to a second theory of the author's, designed to make possible the prediction of the sex of coming children in multiparae. The second theory is this, that the ovaries ovulate alternately, and it is supported again by a considerable body of evidence. Dr. Dawson claims 97 per cent. of successes in his predictions of the sex of unborn children. Naturally there are limitations in the making of such forecasts, and these are duly pointed out by the author. As a corollary the production of children of either sex as desired should, again within limits, be possible in the case of multiparae; again, Dr. Dawson claims that he has been successful here in many instances.

It is clear that Dr. Dawson's theories are ambitious, for they offer solutions of problems attacked by medical men and biologists again and again, at any rate since the time of Hippocrates. But are his solutions correct? This question is merely one of fact, and the answer will depend only upon the evidence afforded by the collection of observations. Thus valuable evidence for or against his view that the right ovary produces male ova and the left female could be collected at Caesarean operations; the sex of the child could be compared with the site of the ovarian corpus luteum. Similar evidence could be collected in the *post-mortem* room. Dr. Dawson's book is well written and its subject matter is clearly arranged. Its topic is one of such general interest that it is highly desirable that Dr. Dawson's theories should be submitted to the test of clinical observation, as has been partially indicated above. Their truth or error can be proved in no other way.

LUCIANI'S "PHYSIOLOGY."

The fourth instalment of the English version of Professor Luciani's *Human Physiology*[7] is devoted to the sense organs, and includes a full account of the sensibility of the viscera, with adequate recognition of the advances made by Head and other British workers. In the concluding chapter, on the psycho-physical phenomena of consciousness and sleep, a comparison is drawn between the conscious and unconscious mental processes which are not sharply separated but merge into each other in the nascent or twilight consciousness. The late F. W. Myers's opinion that "an inspiration of genius is in truth a subliminal uprush," or the penetration of the psychical diaphragm between consciousness and subconsciousness by the workings of the subconscious mind, is supported by an interesting account of the mental process attending the discovery of the Fuchsian functions by Henri Poincaré, the great mathematician, whose death French science had recently to lament. As has been said in previous reviews, Luciani's book has the lucidity, literary charm, and philosophic outlook that characterized Sir Michael Foster's textbook in the eighties and nineties. The English is so good that the reader is never reminded that it is a translation, and so perhaps is inclined to forget his debt to Miss Welby and Dr. Gordon Holmes; the general get-up is worthy of the traditions of the publishers.

[6] *The Causation of Sex in Man.* By E. Rumley Dawson, L.R.C.P., M.R.C.S. Second edition. London: H. K. Lewis. 1917. (Demy 8vo, pp. xiv + 226; 22 figures. 7s. 6d. net.)

[7] *Human Physiology.* By Professor Luigi Luciani. Translated by Frances A. Welby. Edited by Gordon Holmes, M.D. Vol. iv: The Sense Organs. London: Macmillan and Co. 1917. (Pp. 519; 216 figures. 21s.)

NOTES ON BOOKS.

Mr. Arnold J. Toynbee, one-time Fellow of Balliol, has prepared a volume entitled *The German Terror in France*,[8] which is a continuation of his volume with a similar title on Belgium. Both books are compilations from official documents illustrated by photographs and excellent sketch maps. In his new volume the facts are classified under the four regions overrun by the Germans, and arranged chronologically. The book is only intended to be a general summary and to serve as a guide to the official documents in the Bryce report and in the reports of the French, Belgian, and German Governments. The book is, of course, very much condensed because, as Mr. Toynbee says, for those who read the tales there comes a point where imagination rebels or is blurred by mere repetition. Beyond the parrot cry "It is war," the Germans have made no reply except to say that their object was to confer the benefits of their civilization on the French and Belgians. They do not call it civilization, but *Kultur*, which is perhaps as well, for the latter word means no more than the way a nation understands the organization of a community. The German bases his Kultur on war, and considers rape, murder, mutilation, and arson legitimate methods of warfare and appropriate means of convincing other nations of his intellectual superiority. The stage of mentality reached by his subjects may be judged by the Kaiser's Christmas assurance to them that 1917 has proved that they have "in the Lord of Creation above an unconditional and avowed ally."

The Annals of Medical History, a beautifully got up periodical, recalling the *Burlington* or *Connoisseur* in its typography and illustrations, deserves a generous welcome from all, and they are an increasing band, interested in the history of medicine. The editor, Dr. F. R. Packard, and the publisher, Paul B. Hoeber, who were recently associated in the artistic reprint of MacMichael's *Gold-headed Cane*, are supported by twelve associate editors, of whom one, Sir William Osler, is on this side of the Atlantic. Appearing quarterly, the *Annals* contain original articles, reviews, notes and queries, and is free from any advertisements; these attractions, and the knowledge that it is the only periodical in English exclusively devoted to medical historical literature, should ensure it a large subscription list at six dollars a year. The first number, dated April, 1917, but reaching us several months later, opens with a scholarly article on the scientific position of Girolamo Fracastoro by Dr. and Mrs. C. Singer of Oxford. This is followed by Dr. F. H. Garrison on the Greek cult of the dead and the Chthonian deities in ancient medicine. In a sympathetic account of Voltaire's relation to medicine Dr. Pearce Bailey of New York does honour to a great and far-sighted reformer to whom medicine owes no trivial debt. Dr. C. W. Burr gives an interesting study of Burke and Hare and the psychology of murder, with Forbes's portrait of Robert Knox reproduced from the *Students' Magazine*. Dr. C. D. Spivak writes on Hebrew prayers for the sick, and quotes the briefest prayer on record, by Moses, consisting in the original of five short words. "Laryngology and otology in colonial times" is the title of an article by Dr. S. A. Friedberg, based on a manuscript of the eighteenth century. Then come the editorial, a short but interesting note on the legend of the mandragora, and lastly, reviews of books. The subscription price for the *Annals*, which appear

[8] *The German Terror in France.* By Arnold J. Toynbee. London: Hodder and Stoughton. 1917. (Demy 8vo, pp. xv + 212; 52 illustrations, 6 maps. 1s. net.)

quarterly in April, July, October, and December, is 6 dollars yearly and 2 dollars for single numbers, and should be sent to the publisher, Paul B. Hoeber, 67–69, East 59th Street, New York, N.Y., U.S.A.

The *Medical Directory*[9] for 1918 makes its appearance punctually and contains the matter which has rendered it for very many years so useful to the medical profession. It is, in fact, an indispensable work of reference for all concerned with medical administration, whether military or civil, and we could wish that a copy was to be found in the office of the principal medical officer of all the military forces at home and abroad. The number of names it contains shows an increase of 152 as compared with the issue for 1917, and of 459 since 1915. As compared with ten years ago the increase is 3,126. The number of names in the London part of the *Directory* is exactly the same as in 1917; in the rest of England there is a decline of 96, and in Wales an increase of 2. In Scotland there is an increase of 148 and in Ireland of 129; abroad there is an increase of 31. We give these figures for what they are worth, but they are open to an obvious fallacy, as is indicated by the fact that a decrease of 62 is shown in the number of names in the list of the services. The figures afford no sure indication of the number of practitioners actually in practice at the addresses given, for so many withdrawn for military service still appear, as is proper, under their home address.

[9] *The Medical Directory*, 1918. Seventy-fourth annual issue. London: J. and A. Churchill. (Roy. 8vo, pp. 1958. 16s. 6d. at home; 18s. 6d. abroad.)

THE EFFECT OF LIQUOR CONTROL UPON ALCOHOLISM IN WOMEN.

IN the JOURNAL of May 19th, 1917, page 651, we gave a summary of an address by Lord D'Abernon on public health and the control of the liquor traffic. He has now supplemented this by a further address given to the Royal Institute of Public Health, on December 19th, dealing with the effect of the regulation of the liquor traffic on alcoholism in women. The importance of this subject may be judged from the fact that the number of women now in industrial life and in non-sheltered occupations common to men, exceeds by nearly a million and a half the number so employed before the war. Moreover, this increase in the number of women workers has been associated with a large rise in the average wage of female labour, so that the annual spending power of women is now estimated to exceed by something like two hundred million pounds that which they had before the war, without taking into account the allowances made to the wives and dependants of soldiers and sailors. This profound change of circumstances has led, as might be expected, to a larger use of public-houses on the part of women. But the anticipation based on previous experience that alcoholic excess would be greatly encouraged among women has been falsified. While the number of women exposed to alcoholic temptation and possessing the means to gratify the inclination has enormously increased, statistical and other evidence indicates that insobriety among women, both in public and in the home, has since 1914 decreased to a level far below anything recorded during the last fifty years. While the number of women employed increased during the first three years of the war by more than 40 per cent., female convictions for drunkenness decreased by 73 per cent.

That the decline in insobriety is not confined to public drunkenness is shown by a corresponding decline in sickness and mortality from alcoholism, and from other conditions generally recognized as due to excessive drinking. Comparative statistics for delirium tremens are only available for a few of the larger towns, but in Liverpool, for instance, the number of female cases of this disease have fallen by more than 80 per cent. below the figure for 1914. The tendency of the movement as a whole is clearly visible in the figures of mortality from alcoholism and alcoholic diseases in England and Wales recently given by the Registrar-General. These show a decline of more than 50 per cent. since 1914. It would thus appear that the reduction in the hours for the sale of alcohol in licensed houses has not driven drink into the home, and this view is supported by the recent decline in suicide among women, and in the cases of suffocation of infants under one year of age, as well as in female mortality in London from cirrhosis of the liver.

Lord D'Abernon next discussed the influence of the various restrictive and other measures affecting the liquor traffic upon the recent decline in excessive drinking. The restrictive measures of the Liquor Control Board have now been in force for over two years, and their effect was fully discussed by Lord D'Abernon in his previous address. As regards constructive measures to increase opportunities for non-alcoholic refreshment, he speaks in terms of warm appreciation of the good work done by the Canteens Committee of the Board in supplying canteens and messrooms in national factories and controlled establishments and in the neighbourhood of docks; and he is convinced that the system will before long be generally adopted throughout the industry of the country.

Turning to the restrictions of the Food Controller upon the output and release from bond of alcoholic liquors, he notes that these are clearly of a temporary kind intended to meet new food conditions due to the war. Their precise effect upon sobriety is difficult to measure; in so far as they have driven up prices, their influence may be considered beneficial; they also encourage retailers to dilute spirits to the new level, and promote the brewing of weaker beers. On the other hand, the drastic cutting down of supplies causes uncertainty as to the likelihood of obtaining liquor, with periods of "rush" drinking; and it might be added that "whisky queues," and the like, are, to say the least, an unedifying waste of public time. Viewed solely from the point of view of temperance and efficiency, Lord D'Abernon regards these alternations of plethora and famine as clearly undesirable, and a considerable set-off to the good effect of higher prices. The emergency restrictions upon output are thus on quite a different footing from the restrictive and constructive measures of the Liquor Control Board, and Lord D'Abernon makes out a strong case for maintaining the latter after the war, being convinced that restriction and regulation on reasonable lines are not only needed on national grounds, but are beneficial to trade interests. He concluded by arguing that the influences checking public drunkenness must also have done much to raise industrial efficiency by reducing the extent and intensity of chronic alcoholic poisoning in its less pronounced forms and earlier phases. In view of this, and of the marked improvement in the care of children and of the home, attributed by medical officers of health and others to liquor restrictions, he cannot believe that any responsible body of opinion would wish to sacrifice the ground gained and relapse into pre-war conditions.

PUBLIC HEALTH OF ENGLAND AND WALES IN 1916.

THE supplement to the forty-sixth annual report of the Local Government Board, containing the report of the medical officer for 1916–17, appeared recently. Sir Arthur Newsholme begins by pointing out that a review of the national health during the year has again been rendered exceptionally difficult by the disturbance of population due to war and to the vast new industries created during the war. For the same reasons the medical officers of health have found great difficulty in accurately estimating populations when recording birth and death rates. With the single exception of measles, the record of ordinary infectious diseases has remained favourable. In this respect the first three years of the war gives cause for satisfaction. During 1916 measles and German measles were for the first time notifiable, and throughout England and Wales some 348,000 cases were notified, giving a rate of 1 per cent. of the population.

The report indicates a number of important health services which have been prejudiced by the war; against this there is to be set the much increased attention paid to the means of improving the health of mothers and young children. Certain local authorities still remain inert and unteachable, but generally speaking there was during 1916 a great growth of work on behalf of maternity and infant welfare. The need for redoubled effort in these directions is emphasized by the diminished natural increase of population during the two years. In 1914 there were 362,354 more births than deaths in England and

Wales; in 1915 this excess of births over deaths was only 252,201; while in 1916 the excess was 277,227. These figures reveal the importance of saving child life and of improving the health of all survivors, and in this connexion Sir Arthur Newsholme expresses the opinion that there is no insuperable difficulty in reducing the total deaths in childhood to one-half their present number. It is encouraging to note here that during 1916 the rate of infant mortality was the lowest on record.

The Claims of the Army.

The annual report for the previous year made reference to the demands of the army for medical practitioners, and, as is well known, these have become still more urgent, with a corresponding increase in the work of inquiring into each case in which the release of a public health officer for military service is concerned. A large number of both whole-time and part-time medical officers of health for England and Wales have now left their civil work for service with the army. Their places have in a number of cases been filled by women. Two medical women are now acting as county medical officers of health, while many more hold official appointments as tuberculosis officers and assistant tuberculosis officers. But the depletion of the public health services has become serious, and unless considerable readjustments are made, more medical officers cannot be spared consistently with the public safety. While more than 500 public health officers have joined the forces, the subordinate staffs of sanitary inspectors have also been greatly depleted, with the result that many untrained men and women are carrying out the duties formerly in the charge of trained men. It is scarcely surprising to learn that under such conditions outbreaks of infectious diseases have here and there not been promptly controlled. Moreover, especially in regard to small-pox, enhanced risks have had to be taken owing to the inexperience of the local officers, and much of the time of those medical inspectors of the Board who are not on military duty is taken up in emergency work arising therefrom. This section of the report closes with a tribute to the medical officers of health and sanitary inspectors remaining on civil duty, who have not only done admirable work in their own districts but have assisted less experienced colleagues in other districts.

Enteric Fever.

The prevalence of enteric fever, says the report, is, perhaps, the best single gauge of the sanitary condition of the community; and it is satisfactory, therefore, to note that following on the steady decline of this disease during the last thirty years, there has been during the last two years a striking fall in the number of cases. In 1911 there were 13,852 cases notified in England and Wales; the number has steadily fallen year by year to 5,564 in 1916. It appears that some areas are still remiss in notifying cases of enteric fever, with consequent risk to the community and confusion of statistics. The more considerable local outbreaks were investigated by the Board's medical inspectors, and some of their inquiries are briefly described in the report. As in previous years of the war the medical department of the Board kept in touch with the Army Medical Department as to the precautions to be taken upon the discharge of military convalescents from typhoid and paratyphoid fever. Thorough and systematic arrangements have been made for the transfer of such convalescents to enteric dépôts, where bacteriological examinations for the discovery of carrier cases are made before each patient is discharged. Upon his discharge from the dépôt notification is sent to the medical officer of health for the locality where the man intends to spend his furlough. Similar arrangements as regards dysentery have also been in force for some time, and nothing but good can come of such co-operation.

Poliomyelitis.

There was a very severe outbreak of this disease in New York City during 1916, with 8,900 cases and 2,400 deaths, but nothing of the sort, fortunately, occurred in this country. The possibility of such outbreaks, however, justifies the close watch kept on the prevalence of this disease and the collection of all the facts of individual cases with a view to the accumulation and analysis of epidemiological evidence. Continued study of the conditions under which this disease occurs is imperatively needed: "Not only does its fatality amount to about 14 per cent., the greater number of the victims being young children, but one-half of the survivors remain permanently crippled." In view of these facts, Sir Arthur Newsholme does well to remind medical officers of health of the important aid they can give in enabling patients who have suffered from poliomyelitis to become efficient members of society. Notified cases should be periodically visited and parents should be impressed with the importance of securing suitable treatment promptly and continuously, so as to minimize the deformities otherwise likely to occur.

Tuberculosis.

The longest section of the report is devoted to the subject of tuberculosis. The total deaths from this disease during the past six years are set out in a table. Comparing 1913—the last complete year before the war—with subsequent years, deaths from pulmonary tuberculosis were 1,582 more in 1914, 4,621 in 1915, and 4,490 more in 1916. This increased mortality from pulmonary tuberculosis was shared by both sexes, and was not reflected by a corresponding increase of deaths from other forms of tuberculosis. The assumption that it was due to the altered conditions of life during war time must be considered in relation to collateral experience of other diseases, notably influenza, pneumonia, and bronchitis. The figures for 1915 and 1916 show that the increased death-rate from pulmonary tuberculosis was associated with a still greater mortality from influenza, just as was the case in the years 1890–1892, and again in 1899–1900. The year 1915 was notable also for the high death-rate from pneumonia and bronchitis; but in 1916 the deaths from pneumonia no longer occurred in excessive numbers, whilst the excess in deaths from influenza and from bronchitis continued on a smaller scale than in 1915. The only safe inferences from these figures seem to be that influenza is a very dangerous complication of pulmonary tuberculosis, and that the war conditions of the past two years have had an important share in the excessive mortality from all four diseases. Men in the army and men and women in industrial employment have been exposed to conditions leading to the spread of tuberculosis and to the calling into activity of latent disease. The experience of the Continental countries engaged in the war seems to be the same. In all of them, so far as official records are available, tuberculosis appears to have been more rife and more fatal than before the war. In our own country, at least, this unfavourable record would no doubt have been worse but for organized efforts to secure improved conditions of work and housing for munition workers.

In view of this association of war conditions with a notable increase of pulmonary tuberculosis Sir Arthur Newsholme gives an instructive summary of the special action taken in recent years for the control of tuberculosis. Between January 1st, 1909 (when Poor Law cases of pulmonary tuberculosis became compulsorily notifiable), and the outbreak of war, a series of important steps were taken in the direction of the administrative control of tuberculosis. These efforts were meeting with increasing success until the war rudely intervened, and not only put a stop to further developments of organized antituberculosis work, but seriously crippled the efficiency of existing measures. The linking up of the different agencies required to secure the full benefit of the schemes has also been serious retarded by the war.

The difficulties and defects of the tuberculosis arrangements hitherto made are set out by Sir Arthur Newsholme with a view to further action directed to their removal. In normal times a large proportion of consumptives refrain from applying for treatment until the disease is fully established and they are incapacitated for work. In the three years of the present war temptations to neglect symptoms pointing to consumption have increased, as have temptations to conceal the fact of the existence of consumption. With regard to the private practitioner, it is pointed out that early recognition and treatment depend upon his skill, upon his having adequate time for the examination of each patient, and upon his willingness to refer doubtful cases for consultation with the tuberculosis officer. In the circumstances of war, when nearly every doctor remaining in civil practice is overworked, these conditions cannot at

present be fulfilled. The report is especially insistent on the need for greater co-operation between the family doctor, the tuberculosis officer, and the medical officer of health. If this took place generally a much higher proportion of cases would be recognized at the earlier stage when no sputum is available, and the tuberculous character of many cases of so-called chronic bronchitis would be recognized. The question is discussed at some length why sanatorium treatment as hitherto developed has fallen short of expectations, and the opinion is expressed that the best results are only to be got when the form of treatment in every case is determined solely by the medical needs of the patient. The hygienic conditions of the patient's home should influence this decision, but if regard is had to any other considerations institutional treatment must continue to give relatively unsatisfactory results. This section of the report ends with the maxim that housing and institutional treatment for tuberculosis are to be regarded not as alternatives, but as necessary complements to one another, each calling for increased expenditure.

Venereal Diseases.

During the close of the period under review much of the time of officers of the medical department was given to work in connexion with the setting up by local authorities of schemes for the treatment of venereal diseases. These schemes owed their origin to the regulations issued by the Board in July, 1916, which were followed by conferences between medical inspectors of the Board and local officials. By the end of last March eighty-six out of 145 councils had submitted schemes, of which forty-five were approved. Valuable help was given by the National Council for Combating Venereal Diseases in dealing with the curious objections raised by squeamish hospital boards, and in arousing local interest in local schemes. The Army Council has also assisted in certain districts by allowing R.A.M.C. officers with special experience of venereal diseases to be appointed for this work. The evidence given before the Royal Commission and the experience of the army have led medical officers of treatment centres to use salvarsan substitutes very largely in the treatment of syphilis, especially in its early stages. This course is considered most desirable by the Board, but medical officers of centres are in no way limited as to the choice of remedies for each particular case. Where specially trained experts are not available the Board discourages arrangements for making the Wassermann test in the laboratories of local authorities. It has also decided that pathologists under venereal disease schemes are not to be approved unless they are medical men, and therefore in a position to apply the knowledge obtained by medical training to problems arising in connexion with specimens taken from patients suffering from or suspected of venereal disease. With regard to gonorrhoea, it is noted that the treatment of this disease even under the best conditions does not compare in efficacy and in the rapid reduction of infectiousness with the treatment of syphilis by arseno-benzol preparations. Prompt and early treatment of gonorrhoea is of primary importance, and arrangements have been made with the Army Council for Colonel Harrison to provide, for publication by the Board, in a form available for civilian practitioners, the valuable experience obtained by army doctors in the control of this disease.

Miscellaneous.

The concluding sections of the report deal with maternity and child welfare work, in which there has been much activity under pressure by the Board; with scientific investigations conducted under the auspices of the Board; and with the personnel of the medical staff, more particularly in respect of war services. On the outbreak of war all the medical inspectors of the Board at once placed their services at the disposal of the president for service in any capacity. Among those who were chosen for commissions was Dr. J. Morgan Rees, who was killed in France in October, 1916, while serving in the R.A.M.C. The appendices to the report include a summary of information on cases of poliomyelitis by Dr. R. J. Reece; Dr. A. W. J. MacFadden's valuable report on the work of inspectors of food; Dr. Eastwood's report on the work of the Board's pathological laboratory; and Dr. F. R. Blaxall's report from the Government lymph establishment.

ROYAL MEDICAL BENEVOLENT FUND.

AT the last meeting of the Committee, held on Tuesday, November 13th, 1917, thirty-five cases were considered, and £330 voted to thirty-three of the applicants. The following is a summary of some of the cases relieved:

Widow, aged 38, of M.R.C.S.Eng. who practised at Oxford and died in January, 1917. Applicant was left with five children, aged 10 months to 13 years, and with exception of £1,100 capital is dependent on relatives, who cannot do very much. Wants help for the education of the children. Voted £20, and referred to the Guild.

Daughter, aged 56, of M.R.C.S.Eng. who practised in North Wales and died in 1913. Applicant was teaching in Austria when the war commenced, and lost practically all her belongings. Only certain income £21 per annum, and this year has been living on a legacy of £60 left her by a relative. Health has been very indifferent of late. Voted £10, and referred to the Guild.

Daughter, aged 52, of L.S.A.Lond. who practised at London and Eastbourne and died in 1882. Applicant and her mother lived together until the death of the latter in July, 1917, and several small items of income died with her. The applicant has a small school, the profit from which is about £25 a year. Her other income is from investments bringing in about £14 a year. Voted £10 in two instalments.

Daughter, aged 34, of M.R.C.S.Eng. who practised in Yorkshire and Bedford and died in 1906. Applicant has been a chronic invalid all her life, and her brother-in-law has kept her since her father's death, but owing to illness and loss of income he cannot do so entirely now. Voted £18 in twelve instalments.

Daughter, aged 65, of M.R.C.S.Eng. who practised in London and Birmingham and died in 1856. Applicant tries to make a living by sewing, but owing to bad health and the increased cost of living is unable to pay her way. Relieved three times, £36; last time, March, 1913. Voted £12 in twelve instalments.

Widow, aged 36, of L.R.C.P.Edin. who practised in Edinburgh and died in 1916. Applicant was left with four children, aged 3 to 11, with an income of £96 a year. Owing to the increased cost of living she finds it impossible to manage. Relieved once, £12. Voted £15 in twelve instalments.

Widow, aged 59, of L.R.C.P.Edin. who practised at Langley and died in 1909. Lives in own house, which is heavily mortgaged. Endeavours to make a living by taking in paying guests, but, owing to high price of living, is unable to make ends meet. Relieved seven times, £70. Voted £10 in two instalments.

Widow, aged 60, of M.D.Glag. who practised in Perthshire and died in 1907. Her total income from a lodger and other sources £73. Son who helped to keep the home together now in the army. Relieved three times, £22. Voted £10.

M.R.C.S.Eng., aged 48, married, who has practised at Birmingham. Applicant suffers from disseminated sclerosis, and is quite helpless. Only income 10s. a week from relatives. Only son recently elected to an Epsom College scholarship. Relieved once, £18. Voted £26 in twelve instalments.

Widow, aged 47, of L.R.C.P.Edin., who practised at Lochgelly and died in 1913. Has five children, of whom two only are able to assist by providing £95 a year. One son in the army, and no separation allowance. Increased cost of living makes it impossible for her to manage. Relieved twice, £30. Voted £10 in two instalments.

Widow, aged 54, of M.D.Edin. who practised at Newcastle and died in 1896. Applicant left without means. She obtained work, but fractured her leg some time ago, and has been incapacitated since. Has a daughter who is a widow and works as a clerk and helps as far as possible. Relieved three times, £36. Voted £12 in twelve instalments.

M.R.C.S.Eng., aged 47, married, who practised in London and other places. Applicant has suffered from asthma for a number of years. He joined the R.A.M.C., but after a few months was invalided out. Now totally incapacitated from work, and his wife, who had obtained a post, had to give it up to nurse him. All savings practically exhausted. Voted £20, and recommended to apply to another fund, from which a little help has been given.

Subscriptions may be sent to the Acting Honorary Treasurer, Dr. Samuel West, at 11, Chandos Street, Cavendish Square, London, W.1.

The Royal Medical Benevolent Fund Guild is now called upon, as a result of the war, to deal with many widows and children who, in happier times, would not have thought of asking for assistance. It is glad to receive secondhand clothing and household linen. The class of clothes most wanted is that suitable for boys and girls working in offices, for women, and for old men. The gifts should be sent to the secretary of the Guild, 43, Bolsover Street, W.

THE Prussian medical court of honour was called upon recently to decide whether doctors should be entitled to reserve to themselves the right to raise their bills if not paid within a certain period. The court decided against this proposal as being derogatory to the dignity of the medical profession.

British Medical Journal.

SATURDAY, JANUARY 5TH, 1918.

THE ASSOCIATION IN 1917.

It has been our custom in the first number of each new year to pass in review the main events of the medico-political world during the preceding twelve months. Present conditions, however, impose brevity upon us no less than upon our correspondents and contributors, and this retrospect must be limited to a few outstanding features only of the work of the British Medical Association in 1917. The full chronicle will be found in the reports of Council, in the records of the proceedings of the Annual Representative Meeting and of the Divisions, and in the report of the conference of Local Medical and Panel Committees. From these it is evident that while the time and energies of medical practitioners have been more and more encroached upon under the grip of war, a number of new problems, as well as of old problems with new names, have had to be handled on behalf of the profession.

Of the topics not immediately related to war, the proposal for a Ministry of Health has, perhaps, attracted most interest, and taken up the greatest share of the time of officers, committee-men, and officials. The story begins with a paragraph in a lay paper last January to the effect that the Local Government Board was about to launch "a little bill" for dealing with maternity and child welfare. It was at once seen that such a measure would have far-reaching effects, and after the matter had been discussed by the committees interested in such questions a special subcommittee was formed to define the policy of the Association. The conclusion was soon reached, and has since been confirmed by the Representative Body and the profession at large, that the only possible method for placing the health administration of the country upon a sound basis would be by the creation of a Ministry of Health—a measure advocated by the Association at intervals during the past fifty years. Communications were opened up with Lord Rhondda, then President of the Local Government Board, and an outline scheme was drafted which formed the basis for further discussion within the Association. This scheme was approved in general terms by the Representative Body, which empowered the Council to go further into the matter, and to present these proposals to the Government on behalf of the medical profession. Since then the Ministry of Health Committee appointed by the Council has held conferences with the promoters of a bill drafted by the National Insurance organizations, and with representatives of the Society of Medical Officers of Health and other professional organizations directly concerned. The original proposals have been examined in the light of recent events, and a revised scheme has been drafted by the committee for submission to the next meeting of the Council. Furthermore, as we noted last week, the Association has been approached by the Minister of Reconstruction, to whom the Cabinet has entrusted the duty of sounding the chief parties interested with a view to the possibility of an agreed bill, and the considered opinion of the Association has now been set out in a memorandum, which was forwarded in the last week of the year to Dr. Addison.

During the year several matters arose of great importance to panel practitioners, and these were brought to a head at the annual conference, on October 18th, of representatives of Local Medical and Panel Committees. It was recognized before the meeting that the Insurance Acts Committee of the British Medical Association would have to justify itself once more as the official mouthpiece and central co-ordinating body of the profession in insurance matters. After criticisms had been answered, and explanations given, it became clear that the Committee retained the confidence of the great majority. A proposal that in all negotiations the members of the profession on the panels would be better represented by some separate organization directly appointed by Panel Committees, was lost by 113 votes to 16, while a vote of confidence in the Insurance Acts Committee was subsequently carried by a very large majority. The conference thus reaffirmed the position of the Committee as the authorized spokesman of panel practitioners in central negotiations. This point being settled, the much-discussed regulations for the medical treatment of discharged disabled soldiers and sailors were considered, and it was finally resolved that in view of the decisions of the 1916 conference the Committee had made as good an experimental arrangement as was possible.

With regard to the remuneration for insurance work generally great dissatisfaction was expressed, criticism centring round the constitution of the central pool, and the methods of distribution thereof. It is clear that the medical profession will not be satisfied with the present system of payment as outlined in the explanatory memorandum of the Commissioners (Memo. 229/I.C.) issued in October, 1916, which makes the "insurance day" the unit of remuneration. The conference instructed the Insurance Acts Committee to press for an independent actuarial investigation of the central pool, and to this the Commissioners have since agreed. Other important resolutions related to the just claims of rural practitioners for increased mileage grants. As the result of representations made on their behalf by the Insurance Acts Committee the Commissioners have lately induced the Treasury to authorize an additional grant for 1917, which will permit of an increase in the special payments made to rural practitioners in respect of mileage generally, including extra payments for mileage under the scales laid down for the treatment of temporary residents and for invalided sailors and soldiers. Lastly, the conference demanded, in response to a general feeling throughout the country, that the capitation fee for insurance work should be raised to at least 10s. per annum during the present year. This demand has been placed before the Commissioners by the Insurance Acts Committee. If their negotiations should fail, it is thought that the scheme for collective bargaining approved by the conference may prove a powerful lever at a later date.

A subject prominent throughout the year has been the control of venereal diseases. At the end of January a joint deputation from the British Medical Association, and from municipal corporations, had an interview with the President of the Local Government Board to urge the suppression of the treatment of venereal diseases by unqualified persons, and shortly afterwards the Association issued an important memorandum to local authorities embodying its recommendations for the organized prevention and treatment of these diseases. On March 6th a Venereal Diseases Bill in conformity with the views of the

deputation was introduced into the House of Lords, and later became law. Beyond this the Association has had a hand in fixing the fees medical officers of venereal disease clinics should receive, the scale laid down by the Representative Body having been largely accepted by local authorities throughout the country.

The increasing difficulties of carrying on medical practice in war time have made it necessary for the Association to keep a close watch on Government restrictions as they affect the mobility of doctors, especially those in country districts. Assistance has been given to practitioners in obtaining licences for an adequate supply of petrol; the Ministry of Munitions has been persuaded to make arrangements to facilitate repairs to doctors' cars; and a working arrangement has been entered into for securing a limited supply of carbide for motor lamps for practitioners whose claims can be recommended by the Association. A badge for doctors' motor cars has also been prepared for issue to members of the Association who undertake to use it only when motoring on professional duties. The idea has been cordially approved by chief constables throughout the country, and it is expected that cars bearing this emblem will be relatively immune from the attentions of policemen on the look-out for breaches of the Motor Spirit Restriction Order. It need scarcely be added that this privilege will depend upon the loyal adherence by all users of the badge to their undertaking.

The Central Medical War Committee was brought into being by the British Medical Association, and has been housed, staffed, and financed by the Association, whose machinery has been at its disposal from the beginning. The work of the Committee is widely appreciated throughout the profession, and it is not surprising that the Representative Body decided once more that Association money could properly be expended on this purpose. The influence and prestige of the Committee has undoubtedly increased during the past year. When the military authorities in April made the false step of calling up all medical men under 41, without reference to the statutory professional committees, the Central Medical War Committee and the Committee of Reference made a firm and dignified remonstrance to the War Office, and having a good case their protest was successful. Since that event the position of the professional committees has become more secure, and the Central Medical War Committee is increasingly recognized by Government departments in all matters coming within its purview. Thus the reconstituted National Service Ministry early sought its advice and co-operation in the setting up of the new recruiting boards; while the Committee of Inquiry into the Army Medical Service, whose report on its findings in France has now been presented to the Secretary of State for War, was mainly composed of members of one or other of the three statutory committees recognized under the Military Service Acts.

THE AIR MEDICAL SERVICE.

THE constitution of the Air Council which will replace the Air Board has been fixed and its relation to other great departments of State and to Parliament defined by an Order in Council made in accordance with the Air Forces Act, and gazetted on December 21st. It provides that the President of the Air Council shall be a principal Secretary of State, so that his position in relation to Parliament and the government on the one hand and to the Air Council on the other will be the same as that of the First Lord of the Admiralty and the Secretary of State for War to Parliament and the government and to the Board of Admiralty and the Army Council respectively. Lieutenant-General Sir David Henderson has been appointed Vice-President of the Council, and there will be eight other members, of whom seven, already nominated, are to be the occupants of certain offices specified in the Order: the Chief and the Deputy Chief of the Air Staff, the Master-General of Personnel, and the Controller of Equipment—these four being appointed by the Crown—the Director-General of Air Craft Production appointed by the Ministry of Munitions, and three other persons appointed by the Secretary of State, of whom two are the Administrator of Works and Buildings, Sir John Hunter, K.B.E. of the Ministry of Munitions, and the Parliamentary Under Secretary, Major J. L. Baird, M.P. hitherto Parliamentary Secretary to the Air Board. A secretary, Mr. W. A. Robinson, C.B. of the Office of Works, and an assistant secretary have been appointed. The Order contains no reference to an Air Medical Service, but it is clear that such a service must at once be established, and it is sincerely to be hoped that the vacant seat on the Air Council may be filled by its Director-General.

The Air Service must be formed at first by combining the air branches of the navy and army into a single service controlled by the Air Council with the new Secretary of State at its head, but recruiting must of course continue. The initiating combination in respect of personnel is to be carried out gradually. At present the officers and men of the two air services are borne on the lists of the navy or army, and the medical officers of air units have been drawn from the one list or the other according to the ascription of the air unit to which they were attached. In this way a certain number of medical officers of both services have gained special experience and have had the opportunity of showing special aptitude for the work. The Air Council will no doubt wish to take these over to form the nucleus of its medical service, and will take care that they lose neither seniority nor prospects of promotion by the transfer.

Part of the work of the Air Medical Service will be of the ordinary kind which falls to be performed by every military medical service, but much of it will be conditioned by the peculiar duties of an air force. Although a considerable proportion of the men enlisted into the Air Service may be for employment on land as mechanics and orderlies at air stations, in repair shops, and in transport and supply, and need not perhaps reach a higher physical standard than men enlisted into other services, it is quite otherwise with the selection of men to be trained for flying. A man who aspires to fly must be submitted to very strict physical examination by the Air Service medical officer before he is sent to be trained; he must be very carefully watched during his training to discover any latent weakness, and after he has been passed as a flyer constant supervision must be kept over the state of his general health, and especially over the condition of his nervous system, to ensure that the perfect adjustment between senses, brain, and muscles, which he must have possessed when he passed the flying tests, is maintained. Many accidents can be traced to a pilot going up when he was not thoroughly fit. The Air Service medical officer in the field or at a camp of exercise must have authority to prevent any man from going up whose quickness of response has deteriorated, and to prescribe the steps to be taken to ascertain whether the deterioration is merely transient, or of such a nature as to require his admission to an Air Service hospital. The duties of such an air medical officer

are therefore in the main clinical, and we would express the very emphatic opinion that in any scheme for an Air Medical Service this fundamental fact should be recognized from the first, and also the further fact that the problems for an Air Medical Service are largely new. The army had an immense body of civil experience and research to draw upon for most of its problems; the same was true of the navy, though in certain directions—vision, for instance—it has had to gain experience which will be of value to an Air Medical Service. But civil practitioners have hitherto had nothing to do with air problems, and physiologists very little. It is therefore incumbent on the Secretary of State for the Air to institute and encourage research into the special physiological and medical problems awaiting solution for the greater efficiency of his service and the saving of lives and equipment. In the Army Medical Service promotion to the higher ranks has very seldom been accorded except to officers selected for administrative posts, who thereupon, as a rule to which there must be very few exceptions, ceased to have any direct personal connexion with clinical medicine and surgery. This may be inevitable to-day when the armies have been so enormously expanded, but it is a misfortune only partly repaired by the appointment and promotion of consultants.

"Fame is the spur that the clear spirit doth raise to scorn delights and live laborious days." If the poet of the puritans could write this, are we to-day to blame a man who, finding the way to the highest positions in his service barred along one road, seeks the other? If it is a misfortune for the Army Medical Service that eminence in clinical medicine and surgery, or in research, very seldom leads to high rank and consideration in the service, it would be a disaster for the new Air Medical Service. We hope Lord Rothermere, when considering the scheme for the Air Medical Service, will give full weight to the scientific side of its work.

THE LOGIC OF THE FOOD POSITION.

"It was so evident that even now he had everything to learn. He did not know that there were physical laws and economic laws, quantities and reactions that all humanity voting *nemine contradicente* cannot vote away, and that are disobeyed only at the price of destruction. He did not know that there are moral laws that cannot be bent by any force of glamour, or are bent only to fly back with vindictive violence. . . . He had to defeat the Giants or go under. He was by no means absolutely despairful. In this hour of his utmost failure, with blood and disaster upon his hands and the rich promise of still more horrible disaster, with the gigantic destinies of the world towering and toppling over him, he was capable of a belief that by sheer exertion of his voice, by explaining and qualifying and restating, he might yet reconstitute his power. He was puzzled and distressed no doubt, fatigued and suffering, but if only he could keep up, if only he could keep talking."

This account of the political leader in Mr. H. G. Wells's story, *The Food of the Gods*, brings to a focus a weak point in the economy campaign of the Food Ministry. Nobody can fairly accuse the Ministry of not realizing the importance of appealing to the public at the present juncture; we doubt whether, even at the crisis of the voluntary recruiting campaign, so much printed matter was circulated or so many speeches and lectures delivered as three months of Sir Arthur Yapp's efforts have produced. But no scientific student of this propaganda can fail to notice that it is tainted with the vice of Mr. Wells's politician—an unhesitating faith in rhetoric as the *primum mobile*.

The public are indeed always being preached at or scolded; they are urged to be patriotic, to do their bit to support our gallant fellows at the front; they are told that what is asked of them is unworthy the name of sacrifice, while the abstemious habits of the Food Controller and his wife (who, we see, at Christmas, "partook of the simplest fare, avoiding even poultry") are chronicled in the daily papers. But what we have looked for and never found in this literature is any sign of faith in the capacity of the working classes to comprehend a reasoned statement. A serious attempt should have been made to render accessible to all the really quite simple scientific facts upon which a system of rationing must be based. There has been no lack of suitable literature. The tract by Professor Wood and Professor Hopkins on *Food Economy in War Time*,[1] and that of Professor Wood on the *National Food Supply in Peace and War*,[2] are written by acknowledged experts, in non-technical language. The pamphlet *Food and How to Save it*,[3] written by Dr. E. I. Spriggs for the Ministry of Food, is a very practical handbook for the housekeeper. It deals with the economical use of food, and has special sections on how to make up the Controller's allowance most cheaply, how it may be done by the well-to-do and those earning good wages, on weekly budgets, and on children's meals. Owing to the date at which it was written it does not now fully apply to present conditions, but it is easy to make the necessary modifications. A Government which can afford to distribute gratuitously millions of copies of a rhetorical sermon might, one would suppose, be able to give a like publicity to the facts of an even graver war problem. As, however, the Government will make no such attempt to educate the nation, the duty devolves upon the medical profession.

In recent issues we have given the heads of a course of instruction which members of the medical profession will, we hope, find useful if called upon to deal with the subject. In the first place, most emphasis should be given to the energy value of food; as Professor Bayliss puts it, "take care of the calories and the protein will take care of itself." This caution is needed because the medical profession in the past has perhaps been rather inclined to dwell upon the problems of nitrogenous metabolism, and the public may have been led to exaggerate the practical importance of this side of dietetics. It should be pointed out that, given an equality of external conditions, the food needs of a worker are completely determined by the muscular exertion he has to put forth. As industrial examples, in addition to those given in previous articles, we may take the following, computed from the valuable data of Slosse and Waxweiler[4] for Belgian operatives. The mean daily energy value for Belgian weavers (56 observations) was 3,366 calories, for miners (115 examples) 3,604, and for quarry men (49) 4,314. These are net values, allowance having been made for waste in cooking and non-absorption; incidentally, they confirm the conclusion reached in an earlier article that the consumption of food by the English working classes, both before and since the war, was by no means excessive. On these lines the necessity of preferential rationing, whether voluntary or compulsory, and the gross absurdity of all sharing alike can be made intelligible.

In the second place, the fallacy of supposing that brain workers need the same quantity of food as

[1] Cambridge: The University Press. 6d. net. (Reviewed December 4th, 1915, p. 827.)
[2] Cambridge: The University Press. 6d. (Reviewed August 25th, 1917, p. 261.)
[3] London: H.M. Stationery Office. To be purchased through any bookseller. Price 3d.
[4] *Enquête sur le régime alimentaire de 1,065 ouvriers belges.* Brussels, 1910.

hand workers, can be exposed by an account of Atwater's results.[5] In this connexion we may refer to an article published in the *Herald* on December 22nd, 1917, under the title "Still Starving at the Ritz." Our contemporary pointed out that while the wealthy might eat their full share of rationed articles they could get in addition an unlimited quantity of the unrationed. It added, "those who imagine that luxurious feeding by the rich does not injure the poor forget that money spent for the benefit of one set of people cannot be spent on others, and also that money only buys labour power in one form or another, and, therefore, labour spent on providing luxuries cannot be spent on the production of the necessaries of life." We called attention to the facts some weeks ago, and it seems to us high time that really effective steps were taken to remove a cause of popular discontent. There is, on physiological grounds, no reason why the customers of the Ritz should be unstinted in their consumption of "suprême de sole Joinville" or "turbot poché, beurre fondu," the latter delicacy involving (if we correctly interpret what Mr. Chesterton has called a sort of super-French) the use of an article not to be obtained in most retail shops.

Finally, instruction in dietetics will include an account of the way in which external conditions—exposure to cold, journeys to and from the factory, and so forth—increase the energy requirements of the body, and reference must be made to the way in which locally abundant sources of energy—such as potatoes, for example, in some districts—can replace those which are scarce and dear. We believe that on these lines, and with a minimum of technical words and details, it is possible to create a sane public opinion, and we think that the medical profession should lose no time in setting to work. It is hard that this new burden should be placed on the shoulders of overworked professional men. It is irritating to them to read and hear the rhetorical nonsense emanating from well-intentioned and ill-instructed amateurs. But the scientific man should remember that the irritation he feels at once is, sooner or later, felt by the bulk of his fellow citizens. They may not be able to give scientific reasons for believing that an account of Lord Rhondda's abstinence from turkey on Christmas Day does not help them towards a solution of their own difficulties, but they are conscious that such statements are valueless. It is this smouldering discontent and annoyance which we fear, and we can think of no remedy other than education, and of no educators other than medical men.

THE DEFECTS OF TUBERCULOSIS ADMINISTRATION.

CRUSADES, whether peaceful or warlike, do not always achieve the promises of their initiators, but failure is generally due to lack of co ordination of the methods of attack. With respect to tuberculosis, the results of combined action do not as yet point to any substantial reduction in the incidence of the disease in crowded areas, although a very considerable number of tuberculous individuals are being restored to working capacity by timely treatment. Does the fault lie with the machinery or with the methods by which the machinery is being employed? The first requirement for the suppression, whether of crime or disease, is detection. The introduction of notification, it was hoped, would enable the presence of tuberculosis in communities great and small to be quickly detected. As at present employed it fails to effect this purpose. The annual returns made by medical officers of health throughout the country bear witness again and again to the fact that notification is frequently deferred until the final stage of the disease is in progress, and that the greater number of notified cases prove fatal within the two following years. Special attention has been directed to this question by Dr. Ellis, tuberculosis officer for Middlesbrough, where already considerable reforms have been introduced and more trustworthy returns obtained. He has repeatedly pointed out that death registration should in all cases be correlated with notification, not only as a means of obtaining accurate information as to the prevalence of the disease in any given area, but also as an indication of the thoroughness with which notification is being carried out. While it is true that the early diagnosis of tuberculous disease of the lung is not so simple a matter as the recognition of the onset of acute infectious disease, yet to wait for the appearance of bacilli in the sputum is to lose valuable time. Recent correspondence in our columns has made it evident, however, that such delay is by no means unusual. It should be recognized not only by the medical profession but also by local authorities that the merest suspicion of the presence of tuberculosis should be a warrant for notification and examination by an expert, armed with all the means of diagnosis that modern medicine provides. If such examination should prove to be negative no harm will have been done, whereas the prompt discovery of a focus of disease may be the means of saving individual life and usefulness, and the prevention of future infection in the household. To be generally effective such a system must be generally adopted upon uniform lines, and it must be enforced. Without some means of compulsion the present go-as-you-please methods of registration and report will not bring us any nearer to the goal. Only when accurate information is forthcoming as to the incidence and distribution of the disease throughout the country can the various agencies for treatment be economically and intelligently applied. Not only central control but abundant powers, delegated to local authorities, are needed if the existing machinery is to yield the results for which it was originally set up.

[5] BRITISH MEDICAL JOURNAL, December 15th, 1917, p. 800.

THE FOOD REQUIREMENTS OF MENTAL WORKERS.

WE publish elsewhere (p. 37) a letter by Dr. Mercier on the food requirements of sedentary workers, which, like all he writes, is interesting, and, from our point of view, the more opportune, because it affords an opportunity of once more stating certain facts which do not yet seem to have received the general appreciation they deserve. Dr. Mercier's letter, indeed, rather provokes the question, *scire tuum nihil est, nisi te scire hoc sciat alter?* About the necessity of vitamines in a diet there can be no two opinions. A diet, superabundant in calories, might be fatally insufficient through a lack of vitamines. But as war flour is an adequate source of antineuritic vitamines, and the fresh vegetables, which the Food Controller urges us to consume, are well supplied with antiscorbutic vitamines, no diet likely to be devised for the civilian population will be defective in these particulars. Hence we did not devote space to enlarging upon the obvious. It is also true that a modicum of protein in the diet is necessary to mental as to other efficiency, although we had forgotten that the credit of demonstrating this belonged to Dr. Mercier; but we were mindful of the evidence produced by Atwater, Benedict, and Carpenter, showing that the intensity of metabolism is not appreciably affected by mental work. Atwater and Benedict,[1] when speaking of their study of the effects of mental work in calculating and studying a German treatise on physics for eight hours a day, say: "In intensity and amount it was such as would hardly be equalled by a person not accustomed by long training to reasonably severe mental effort. Yet, as previously noticed, it exercised no apparent

[1] *Bulletin* 136, p. 191.

effect on the metabolism of matter or energy, the results of the period agreeing in all essential particulars with those of the period in which the subject rested." We do not think there is any evidence that the requisite quantity varies with the consumer's intellectual effort. A caterer who, on the basis of available foodstuffs, drew up a diet scale providing sufficient calories but insufficient protein would need to exercise considerable ingenuity. If we take care of the calories the protein will take care of itself. Lastly, a recognition of the influence of external conditions upon the rate of heat loss, and therefore upon the need for energy in the food, is surely implicit in any argument based upon calories at all. The figures we provided were deduced from average experience, and like all averages may be inapplicable in particular circumstances. This is the real case against any paper scheme of rationing, but, on that point, Dr. Mercier's quarrel is not with us, but with the Food Controller or the U boats.

THE PULSE PRESSURE TEST BEFORE OPERATIONS.

A SIMPLE and reliable test for the estimation of the reserve power of the cardio-vascular system in cases in which an operation is proposed would be a valuable addition to available methods of clinical prognosis. A test of this kind depending on the behaviour of the pulse pressure after exercise has been proposed by Cashman,[1] who gives blood pressure and pulse charts and a number of illustrative cases, including some in which, as a result of this test, operative interference was refused or carried out under local or spinal anaesthesia so as to subject the circulatory system to the least possible strain. In a normal person exertion calls forth a compensatory response on the part of the cardio-vascular system with a rise of both the systolic and diastolic blood pressures; but as the diastolic pressure rises less than the systolic, there is an increase in the pulse pressure, or the difference between the systolic and diastolic pressures, as compared with that before the exertion. On the other hand, a fall in the pulse pressure, whether due to a fall in the systolic pressure or to a rise in the diastolic pressure, shows that there is a poor response to mild strain on the part of the cardio-vascular system, and is usually accompanied by breathlessness, dizziness, or fatigue. This is often seen in visceroptosis, prolapse of the uterus, and gall bladder disease, and may be due to a damaged myocardium or cardio vascular system that is working with so little reserve power that it may fail if subjected to sudden strain. In practically all operations the cardio-vascular system is exposed to strain, varying in different instances, and the risk of death from cardiac failure is considerable in cases in which this test shows diminution of the pulse pressure on mild exertion. The test is carried out as follows: The pulse-rate and blood pressures are taken in the recumbent and in the standing position, then the patient walks rapidly or uses dumb-bells, and the pulse-rate and blood pressures are again taken in the standing and recumbent positions. In normal persons the systolic pressure rises on standing and after exercise, whereas in cases of cardio-vascular debility the systolic blood pressure falls on changing from the recumbent position. The increase or rise of the pulse pressure in healthy persons and its diminution or fall in cardio-vascular insufficiency have already been mentioned. In cases with gross irregularities in the force of the heart the test is difficult to apply. It appears to have been independently suggested by Lankford.

THE ALLEGED INCREASE OF CANCER.

IN the *Journal of Cancer Research* (July, 1917) Professor W. F. Willcox, of Cornell University, publishes an interesting statistical paper on the alleged increase of cancer. He discusses the various explanations which have been put forward to account for the recorded increase of cancer mortality in all civilized countries, and concludes that "the cumulative evidence that improvements in diagnosis and changes in age composition explain away more than half, and perhaps all, the apparent increase in cancer mortality rebuts the presumption raised by the figures, and makes it probable, although far from certain, that cancer mortality is not increasing." The most important addition to existing data contained in Professor Willcox's essay is an extension down to 1913 of the tabulation of deaths from cancer in Frankfort, which was used by King and Newsholme in their well-known paper of 1893. This tabulation supports the original views of King and Newsholme, in that the increase has continued to affect only "inaccessible" cancer in both sexes, the rates for "accessible" cancer being stationary. In other respects the author follows familiar lines, the difference between different workers being chiefly a question of the emphasis put upon particular arguments. In one or two respects Professor Willcox seems to attribute rather more novelty to his criticisms than they possess. We think that all vital statisticians are thoroughly familiar with the fact that comparisons in terms of a standard population are affected by the choice of standard. The discussion has turned not on the fact, but upon how to avoid fallacious interpretations. Professor Willcox does not mention the most recent contribution to the subject, that of Pearson and Tocher,[1] who suggest that when the question is whether two samples are compatible they should be reduced to that standard population which makes it least likely that the two samples could have arisen therefrom. They show how to determine such a standard, point out practical difficulties in its application, and propose another and more general treatment of the problem, which is of importance, and avoids the ambiguity of the standard population method. It should also be noted that many other authors have provided statistical evidence of the association between cancer death-rates and facilities for diagnosis. For instance, Greenwood and Wood found for American cities a correlation of 0.23 between the death-rate from cancer and the presence of a good medical school, the population being kept constant by the method of partial correlation.[2] Maynard[3] also went into the question of diagnosis in connexion with American data.

FLIES IN WINTER.

WHAT happens to flies in winter? This question has long vexed entomologists and sanitarians, and is of special interest now that we have a vast army living under active service conditions, and exposed to fly-borne diseases. Many observers maintain that adult flies are capable of hibernation in warm and quiet corners. According to this view, a few flies in the fully developed form go into winter quarters towards the close of October, and emerge under the spell of the warm spring days to set about the business of propagating their kind. Captain R. P. McDonnell and Staff Sergeant T. Eastwood, R.A.M.C., have recorded in the *Journal of the Royal Army Medical Corps* some observations which tend to show that flies pass the winter in the larval stage, and that the hibernating adult fly is a myth. Their investigations thus support the minority opinion that all flies die off about October or November, and that the species is preserved by the careful selection on the part of the female fly of a suitable hatching ground for her eggs out of harm's way. But those who hold this view have suggested that the ova remain unchanged throughout the winter, and only hatch out into larvae when summer approaches. Captain McDonnell and Staff Sergeant Eastwood made thorough examination of many manure dumps and disused trench latrines in order to test their hypothesis that the flies' eggs deposited in such places during late autumn are the source of the next

[1] Z. Cashman, *Amer. Journ. Med. Sci.*, 1917, cliv, pp. 476-489.

[1] *Biometrika*, 1916, xi, 163.
[2] *Journ. Hygiene*, 1914, xiv, 89.
[3] *Biometrika*, 1909, vii, 278.

year's plague of flies, and, further, that the hatched-out larvae in a dormant state persist all the winter, and come to the surface in spring or early summer. On March 3rd, 1917, after weeks of bitterly cold weather, living fly larvae were found three feet down in a heap of old manure which had lain untouched since October, 1916, and was covered with grass and leaves. Further evidence of the same kind was collected, but the authors rightly refuse to draw definite conclusions from the few preliminary and isolated observations so far made. The practical bearing of these inquiries is evident. If the larvae and pupae of flies are proved to survive in considerable numbers in manure heaps during winter, then manure heaps must be looked on as a source of danger at all seasons of the year. It is, we believe, well established that all the adult individuals of many species of insects do die off during the winter, the race being continued by eggs carefully hidden in a suitable place with a stock of food for the larvae. At the same time there is no doubt that adult flies may be seen on the wing in many warm kitchens all through the winter, and it does not seem to have been proved that these are incapable of laying eggs in the spring.

THE VENEREAL DISEASE DISPENSARY SYSTEM IN GERMANY.

AT the annual meeting of the German Society for Combating Venereal Disease, held on June 22nd, 1917,[1] in Mannheim, the sole topic of discussion was the dispensary system, which has encountered much criticism and opposition. The physician in charge of this system in Metz, Dr. Max Müller, outlined the aims of the dispensary with regard to the continuity of treatment of syphilis. Recovery could be assured only by prolonged treatment and supervision of the patient, and it was one of the functions of the dispensary to step in when the patient, against the advice of his doctor, absented himself. The dispensary was to be a link between the patient and his doctor, shepherding the wayward patient back to his doctor for treatment. Yet the dispensaries, he admitted, had not been received by the medical profession with the "joyful and general acclamation" so good a social reform deserved. Many objections had been raised. It was feared that the dispensaries would interfere with the relations between patient and doctor, and would fetter scientific progress by petty regulations. These were fears which the tact of the dispensary chief would have to allay; he should avoid criticizing the doctor's treatment. Another objection was the breach in the confidential relations between the patient and his doctor threatened by the intervention of the dispensary. The doctors were, however, to be under no compulsion with regard to the dispensary, as had been threatened, and the dispensaries, on the other hand, would shun autocratic ways. In return it was hoped that the doctors would abandon their opposition, which was not appreciated by the general public, which was inclined to overlook the ethical objections of the medical profession to a social reform, and to see in its opposition a selfish motive. In the discussion after this speech it was agreed that the dispensary system must be regarded as an established institution, and that it remained for its adherents to labour for its developments along the best lines. Finally, a motion was passed, without dissent, to the effect that all doctors should help in the campaign against venereal disease, and that those in particular who had already utilized the dispensary system with good effect should enlighten their patients as to its aim and value It was recognized that the doctors should be tactful in committing unwilling patients to the dispensary, and that the campaign against venereal disease could be successful, notably in regard to the dispensary system, only with the co-operation of as many doctors as possible. It was therefore essential for the insurance societies to work in harmony with the medical profession. It was necessary also that unqualified practitioners should not be allowed to tamper with venereal disease, and that treatment by correspondence and public touting for patients should be prohibited by law.

[1] *Med. Klin.*, July 29th, 1917.

MEDICAL TERMS IN THE NEW ENGLISH DICTIONARY.

THE alphabetical rubrics in the current part of the *New English Dictionary* run from stillation to stratum, and the medical terms from stillbirth to stratification, although, of course, the last-named word has other than medical meanings. The term stillborn is defined as "born lifeless, dead at birth, abortive," and no hint is given that it is ever employed in any other sense, although as a matter of fact several recent textbooks of obstetrics regard it as synonymous with asphyxia neonatorum, and one (R. W. Johnstone's) adds: "Stillbirth is not the same thing as the child's being born dead, although death may supervene if prompt treatment is not applied." It is somewhat curious that the first recorded use of the word stillborn in English seems to have been in the figurative sense. It is in Shakespeare's Henry IV, Part II): "Grant that our hopes (yet likely of faire byrth) should be stillborn." Stimulant has three physiological or medical meanings, namely: (1) Something that temporarily quickens some vital process; (2) alcoholic drinks; (3) something that excites an organ to its functional activity. The same three meanings run through the other allied terms such as stimulate, stimulating, stimulation, and stimulus. Stint is an interesting word etymologically, and it is sometimes used with the medical meaning of to check or staunch—for example, a bleeding. The editors of the Dictionary are so careful, as a rule, to give every medical usage of ordinary terms, that one is surprised not to find stirrage given as an occasional synonym of quickening in the sense of the feeling of fetal movements. The employment, however, of stirp, with its modern meaning in eugenics, is chronicled; and stirrup in its surgical application is referred to. Among the rarer medical terms are stithy, the anvil bone of the ear and a disease incident to horses and oxen; stive, the eyeball or the pupil; and stonepock, a hard suppurating pimple. Commoner medical words are found in stomacace, stomatic, stomatitis, stomato- in various compounds, storax, strabism and strabismus, strabotomy and stramonium. Stone has some curious semi-medical significations, such as the equivalent of a urinary calculus or of a gallstone, of a testicle, or as an intensive corresponding to completely, as in stone-blind, stone-dead, and stone-dumb. And so, notwithstanding the vicissitudes of these times, this great national undertaking, the *New English Dictionary*, goes on its way towards a successful, if to a somewhat retarded, conclusion, and the editors are to be congratulated, one and all, on their indefatigable lexicographic labours.

SUNLIGHT, FOLIAGE, AND AIR PURIFICATION.

A PAPER on the influence of sunlight on the formation of nitrites from nitrates in aqueous solution and on the assimilation of nitrites by green leaves, read at the last meeting of the Royal Society by Professor Benjamin Moore, contains several points of general interest. He finds that when green leaves are immersed in nitrate solution comparatively little nitrite accumulates, showing that nitrites are rapidly absorbed by the green leaf. Nitrates taken up by plants from soil would, in the presence of sunlight, be changed to nitrites, which are much more reactive. This indicates that the early stages of synthesis of nitrogenous compounds are carried out in the green leaf and aided by sunlight. Dilute solutions of nitrates exposed either to sunlight or to a source of light rich in light-energy of short wave-length (such as light from the mercury arc) are converted into nitrite. The fact that the interposition of a layer of glass between the source of light and the solution of nitrate

greatly slows the reaction, shows that the most effective rays are those of short length. Rain water preserved for a considerable time contains no nitrites, but freshly collected rain water or dew always contains a mixture of nitrites and nitrates. Air bubbled through distilled water free from nitrite and nitrate gives a mixed reaction afterwards when the water is tested for nitrites and nitrates, showing presence of both forms of oxides of nitrogen in air. There is no hydrogen peroxide or ozone in air at surface level. The fresh odour in open air, commonly referred to as "ozone," is probably nitrogen trioxide, which at high dilutions has the odour of ozone. The oxides of nitrogen are probably formed by the action of sunlight, rich in ultra-violet rays, upon air and aqueous vapour in upper regions of the atmosphere. Professor Moore concluded by drawing attention to the importance of these actions of light in purification of air and water and enrichment of soils and waters by the continuous supplying of matter essential to organic growth, the energy of which, like that for the upbuilding of non-nitrogenous organic compounds, comes from sunlight.

THE PHYSIOLOGICAL PROBLEMS OF THE ILLUMINATING ENGINEER.

THE young profession of illuminating engineering has never hesitated to enlist the help of the ophthalmologist, for, notwithstanding all rules and formulas and readings of photometers, the ultimate verdict on the lighting of any place or building is based on the impression received by the eye. *Solus oculus est judex.* This was pointed out in Mr. A. P. Trotter's presidential address to the Illuminating Engineering Society, when it was stated that it would be useful if more work were done, or at least more literature made accessible, on the physiology of vision so far as concerns the relation of light flux to visual perception. Mr. Trotter pointed out that the range of luminous stimulus to which the eye could respond was enormous extending from illuminations of 0.0001 of a foot-candle on the darkest night to 5,000 or more foot-candles in summer sunshine. There must be some intricate provision over and beyond the mere contraction of the pupil—perhaps a chemical change in the retina, or an inhibition of the optic nerve, or a compensatory reaction or opposing activity in the brain—to explain the automatic adjustment of control which permitted so sensitive an organ as an eye to accommodate itself to such great changes in the external stimulus. If the physiologist could inform the illuminating engineer further with regard to that quantitative control it would be of assistance in many ways. Mr. Trotter suggested that illuminating engineers should give some attention to experimental and observational psychology, so that the various factors involved in sense impressions could be disentangled and dealt with one by one.

THE Royal Dental Hospital, Leicester Square, has received a donation of £250, being the amount allocated to the hospital by the trustees of the late Leopold Salomons, Esq.

THE Scottish Women's Hospitals have done excellent work in France, in Serbia, and in Corsica for the Serbians, in Salonica, and Rumania, as has been noted from time to time in these columns. The committee has now published a second *Thistle* souvenir book, a miscellany of stories, verse, and pictures, intrinsically worth more than the price (Glasgow and London: J. Horn, Ltd. (and Menzies); pp. 104, 1s. 6d.) at which it is sold. The first page reproduces in facsimile a letter from M. Poincaré, who has not forgotten that he is Lord Rector of the University of Glasgow. In it he expresses his gratitude "to the courageous Scottish women for their inexhaustible charity and for the indefatigable devotedness they show to the wounded soldiers of the allied countries." Miss McIlroy is to be congratulated on having got about her so long a list of distinguished contributors and on the good appearance the new number of the *Thistle* makes.

THE WAR.

TREATMENT OF WOUNDS OF WAR.

WE gave some account, a short time ago, of the results reached by the Inter-Allied Surgical Conferences held in March and May, 1917. A third conference, held in November, 1917, was attended by delegates of America, Belgium, Great Britain, France, Italy, Japan, Portugal, and Serbia. It reached a number of conclusions which are of general interest, some of them to surgeons at the front, others also to those serving at hospitals at the base or at home.

Wounds of the Thorax and Abdomen.

(1) In wounds involving both the thorax and abdomen the special factor is the wound of the diaphragm; the wounds of the thoracic and abdominal organs do not present any special features from the anatomical point of view. (2) Hernia of the abdominal organs is difficult to recognize clinically. Radioscopic examination showing displacement of the heart to the right is an element in diagnosis which should be taken into account, especially with haemothorax of the left side. (3) Operation is indicated in almost all cases, the exception being the case of a very small projectile involving only the upper part of the abdomen, especially on the right side. Independently of indications for operation afforded by the thorax and the abdomen, perforation of the diaphragm is in itself sufficient to call for suture. (4) Operation by the thoracic transpleural route presents great advantages both for the inspection of the lesions and for the treatment of the pleural cavity and the diaphragmatic wound (suture). It permits also the treatment of lesions of the subdiaphragmatic abdominal organs, whether herniated or not. (5) Cases occur in which a separate laparotomy may be indicated. (6) Thoraco-laparotomy allows of the treatment of both the thoracic and abdominal lesions on a large scale and through a single incision.

Fractures involving Joints.

(1) The aseptic course seen by osteo-articular lesions in which operation is performed early (within ten to twelve hours) clearly indicates that the surgical treatment of fractures involving joints should aim at the maximum of conservatism. (2) Comminuted fractures of the epiphysis and shaft are now amenable to thorough cleansing and curettage, followed by primary suture. (3) Fractures of the epiphysis and shaft which are partial or in T form are, according to circumstances, amenable to arthrotomy with reposition, or to arthrotomy with limited excision of bony fragments (partial atypical resection) followed by primary suture. (4) Primary resection is indicated only in exceptional instances: (*a*) in the case of bony lesions, when it should be performed only in very comminuted fractures of the articular extremities; experience proves that it is more likely to be required at the hip or shoulder than in the knee, elbow, or foot; (*b*) primary resection in doubtful cases in order to obtain a better functional result should give place to conservative methods (arthrotomy with removal of fragments of bone, partial atypical resection). Bad functional results are amenable to late orthopaedic resection, which will generally be done under better conditions than a primary resection. (5) The indications for primary amputation are crushing of the limb with destruction of the principal arterial trunk. (6) Immediate active mobilization appears to be an indispensable part of operative treatment, and seems to have given better results than those following immobilization (Willems). (7) Resection may still be necessary in the treatment of infected articular fractures.

Treatment of Chronic Osteomyelitis.

(1) The mechanism of infection is the same as that of infection in other war wounds; it spreads in two ways: (*a*) by continuity through the medullary and compact tissue, and (*b*) to a distance along fissures. (2) The spread through the bony tissue is generally slow and limited. Among the earliest germs to spread are the streptococcus, the staphylococcus, the enterococcus, and, more rarely,

anaërobic organisms. The germs most often found in the flora of subacute or chronic suppuration of bones are the streptococcus, staphylococcus, enterococcus, and the pneumobacillus. (3) The treatment of chronic osteomyelitis should above all things be preventive; it does not differ from the treatment of the seat of fracture. (4) At the present time the treatment of established osteomyelitis is purely surgical; it should be undertaken early and consists essentially of (*a*) free opening up of the seat of fracture; (*b*) careful search for all sequestra and foreign bodies, and their removal; (*c*) free laying open of all cavities. (5) This having been done one of two alternative methods may be followed: either (*a*) immediate closure of the wound, completed by an autoplastic operation, or (*b*) chemical sterilization of the wound, secondary autoplasia to fill up the bony cavity, and then suture. The second method is that most generally applicable.

Late Results of Fractures of the Thigh.

(1) Speaking generally, the end results of the treatment of fractures of the thigh are poor. This is due to the extent of the lesions, to insufficient reduction and retention, and, above all, to infection of the seat of fracture. (2) The late results of fractures in the upper third, and still more in the lower third of the femur, are those which leave most to be desired. (3) The late complications most frequently met with are (*a*) infections producing chronic osteomyelitis; (*b*) deformities due to incomplete reduction (shortening, rotation, and angular union); (*c*) very rarely defective consolidation, or functional loss of power having an articular, muscular, or nervous origin. (4) Of these deformities, shortening is the most common, and the only one which is not always avoidable (loss of bone). (5) Rotation and angular union are most often due to inefficient surgical treatment. (6) Primary sterilization is the principal object to be sought; its insufficiency is the essential cause, direct or indirect, of the defective results. The slow progress of, and the difficulties encountered in treating, prolonged infections make it less possible to ensure retention of the fragments. (7) Primary suture of the wound and secondary suture after cicatrization, transforming an open fracture into a closed fracture, have a determining influence on the remote results of treatment of fractures of the thigh. (8) Joint stiffness, very frequently observed in the knee, and stiffness of the hip and the foot, either separately or in combination, can be prevented by early mobilization. (9) Adhesions of muscles to the callus are the cause of many functional troubles which may necessitate surgical operation to free them. (10) Trophic complications (muscular atrophy, oedema, vasomotor disturbances) play a very important part and should always receive early and persistent treatment. (11) Very pronounced deviations, attended or not by osteomyelitis, are amenable to osteotomy; when there is concomitant osteomyelitis resection of the callus is generally indicated.

Wounds of Nerves.

(1) Operations on nerves for war wounds have so far given relatively poor results. Partial lesions give a larger percentage of good results than total lesions. (2) The mediocrity of the results is due chiefly to operation at too late a period. (3) Operation should never be undertaken in the presence of suppuration. (4) The three principal causes of want of success in late operations on nerves are (*a*) sclerosis of the peripheral end which must increase with the lapse of time; (*b*) too wide an interval between the two ends; (*c*) the intensity and duration of suppuration. (5) Retraction of tendons, ankylosis of joints, and ischaemic muscular sclerosis all tend greatly to diminish the value of the functional result. The joints ought from the first to be put in an appropriate corrective position. (6) Primary suture of the nerve, which is rendered possible by the methods now in use for the disinfection of wounds, tends considerably to improve results in respect of the frequency, the rapidity, and the degree of functional recovery. (7) Even when the operation is unsuccessful, primary suture maintains the ends of the nerves in an anatomical position which greatly facilitates later operation. (8) Functional recovery occurs slowly; it requires many months and even years, and this fact must be kept in mind in estimating the final degree of disability.

Secondary and Late Complications of Wounds of the Brain.

(1) The effect of the documents collected* is to show that though secondary complications of cerebral wounds are relatively frequent, late infectious complications are much more rare than was supposed. (2) Organic disorders consecutive to wounds of the brain (hemiplegia, monoplegia, aphasia, visual disturbances, etc.) frequently show a tendency to improve. Their treatment belongs to the domain of neurology. (3) Late epileptic attacks of a Jacksonian character may be benefited by surgical operation—the removal of a cause of compression, of foreign bodies, or of fragments of bone. It is not advisable to operate on account of one or two isolated attacks of Jacksonian epilepsy, for they may be due to an attack of encephalitis from which recovery may take place, and upon the course of which surgical operation can have no influence. Epileptic attacks, except in cases where a foreign body or a fragment of bone is present, do not call for any fresh surgical operation. Where there is hypertension of the cerebro-spinal fluid, lumbar punctures controlled by the manometer may be useful. (4) Late cerebral abscesses, diagnosed and differentiated from non-suppurative encephalitis, ought to be operated upon after accurate clinical localization by the surgeon and the neurologist. After an exploratory puncture and taking care not to destroy protective adhesions, the abscess should be opened and its sterilization tested periodically by bacteriological examination. (5) Late localized meningitis and encysted meningeal abscesses ought to be operated upon. (6) The present treatment of generalized meningitis is usually ineffective. The most rational means of treatment appears to be repeated lumbar puncture. (7) Cerebral hernia with abscess should be operated upon and the abscess drained. It seems preferable, in order to avoid the possible diffusion of a local infection, not to perform lumbar puncture during the acute febrile phase which occurs in some cases of cerebral hernia. When the evidences of infection observed at the onset have diminished, lumbar punctures, by diminishing intracranial hypertension, may favour the reduction of the hernia. Resection of a hernia is an operation only justifiable when local necrosis occurs or meningocele is present. (8) Intracerebral foreign bodies which are determining attacks of encephalitis, epileptic attacks, or an abscess, should be removed. Foreign bodies which are well tolerated ought, it would seem, to be left alone. (9) The facts collected show that cranioplastic operations performed with an aesthetic object are specially indicated when the loss of substance is in the frontal region. From the point of view of cure they are only justifiable in cases in which the distensibility of the scar is the only discoverable cause of the symptoms observed. From the prophylactic point of view the risk of cranial injury of the trephined region later on may be an indication for operation. In every case the surgeon should make sure that there is no contraindication to operation afforded by any nervous trouble, by any chemical or cytological alteration in the cerebro-spinal fluid, or by papillary stasis. (10) The best prophylactic treatment of secondary or late infectious complications is by methodical disinfection and primary sterilization of the intracerebral traumatic foci.

CASUALTIES IN THE MEDICAL SERVICES.

ROYAL NAVY.

Died on Service.

Surgeon Probationer H. M. Macpherson, R.N.V.R.

Prisoner of War.

Surgeon Probationer P. A. Faichney, R.N.V.R.

ARMY.

Died of Wounds.

COLONEL C. C. FLEMING, D.S.O., R.A.M.C.

Colonel Charles Christie Fleming, D.S.O., R.A.M.C., died, aged 53, on December 24th, 1917, of wounds caused by a bomb on the previous day. He was the son of the

* Of 6,664 old cases of trephining in hospitals in regional neurological centres in France the number of epileptic attacks, partial or general, observed was 675 (10.14 per cent.) the number of cases of cerebral abscess was 94 (1.41 per cent.); of old meningitis 32 (0.48 per cent.); and cases of late cerebral hernia 54 (0.81 per cent.: among these old cases of trephining there were 83 deaths (1.24 per cent.), and one case only of sudden death.

late Deputy Surgeon-General Andrew Fleming, was born on November 6th, 1864, and educated at Edinburgh University, where he graduated M.B. and C.M. in 1888. After filling the posts of resident physician and resident surgeon in the Edinburgh Royal Infirmary, and of resident physician in the Edinburgh Royal Hospital for Sick Children, he entered the R.A.M.C. as surgeon-lieutenant on January 30th, 1892, becoming surgeon-captain on January 30th, 1895, and major on January 30th, 1904, and retiring on October 29th, 1910. After his retirement he acted for a time as secretary to the Scottish branch of the British Red Cross Society. He also joined the Reserve of Officers, and rejoined for duty on April 17th, 1915, in his old rank of major. During the war he had risen to colonel, and was A.D.M.S. to the Highland Division when he met his death. He served in the Nile campaign of 1898 as senior medical officer in the operations on the Upper Atbara, in the action at Gedaref, and in the defence of Gedaref; was mentioned in dispatches, and received the medal, the Egyptian medal, and the D.S.O. He also served in the South African war from 1899 to 1902, when he took part in the advance on Kimberley, including the actions of Belfont and Magersfontein, in the relief of Kimberley, and in the operations in Cape Colony and in the Orange River Colony, and received the Queen's medal with five clasps and the King's medal with two clasps.

CAPTAIN N. McG. SMITH, R.A.M.C.

Captain Norman McGaan Smith, R.A.M.C., was reported as having died of wounds, in the casualty list published on December 22nd, 1917. He was educated at Glasgow University, where he graduated M.B. and Ch.B. in 1915, took a temporary commission in the R.A.M.C. soon after, and was promoted to captain after a year's service.

Died on Service.

CAPTAIN W. E. GIBBONS, M.D., R.A.M.C.

Captain Wilfred Ernest Gibbons, R.A.M.C., died at a base hospital on December 21st, 1917, after a short illness following an operation. He was the son of Mr. John Gibbons of Mossley Hill, Liverpool. He received his medical education at the University of Edinburgh, where he graduated M.B., C.M. in 1896, and M.D. in 1900. He had held the office of house-surgeon to the Edinburgh Royal Infirmary, and subsequently became assistant to Dr. Maclaren, the senior surgeon at the Carlisle Infirmary. He settled in practice in Leicester in 1900, and was late chairman and honorary secretary of the Leicester and Rutland Division of the British Medical Association. He took great interest in sports, and on several occasions represented his university at association football. He married in 1901, and is survived by his widow and two children. In 1908 he joined the Territorial Force, and was mobilized with his unit, and had been on the staff of the base hospital since November, 1914.

Accidentally Killed.

CAPTAIN H. M. SPOOR, M.C., R.A.M.C.

Captain Herbert Mather Spoor, M.C., R.A.M.C., was reported as accidentally killed, in the casualty list published on December 29th, 1917. He was educated at Edinburgh University, where he graduated M.B. and Ch.B. in 1908, and then went into practice at Stoke, Rochester, where he held the appointment of superintendent of the Hoo isolation hospital. He joined the R.A.M.C. as a temporary lieutenant on April 17th, 1915, was promoted to captain after a year's service, and received the Military Cross on September 26th, 1917.

Wounded.

Captain R. G. Burnard, Australian A.M.C.
Captain W. C. Douglass, R.A.M.C. (temporary).
Captain F. G. Flood, M.C., R.A.M.C. (S.R.).
Captain J. R. Forde, R.A.M.C. (temporary).
Captain L. R. Hill, R.A.M.C. (temporary).
Captain E. H. Lawson, R.A.M.C. (temporary).
Captain D. M. Moffatt, M.C., R.A.M.C. (temporary).
Captain J. E. S. Smith, R.A.M.C. (T.F.).
Captain C. J. Timms, M.C., R.A.M.C. (temporary).
Captain W. K. Turner, Canadian A.M.C.
Lieutenant G. Gordon, R.A.M.C. (temporary).
Lieutenant S. G. Johnson, R.A.M.C. (temporary).

Formerly Reported Wounded, now Reported not Wounded.

Captain O. Matthews, Australian A.M.C.

Missing.

Captain G. A. D. McArthur, R.A.M.C. (temporary).
Lieutenant T. F. Ryan, R.A.M.C. (temporary).

DEATHS AMONG SONS OF MEDICAL MEN.

Cavanagh, Rev. Bernard C. F., son of Dr. Cavanagh of Dublin, died of wounds in Palestine on December 21st, 1917. He was born at Limerick in 1866, educated at Crescent College, Dublin, ordained in 1890, and had worked for twenty years as a Redemptorist missioner before he joined the army as a chaplain.

Crawford, Dunlop, Second Lieutenant Royal Engineers, only son of the late Dr. John Kerr Crawford of Kilwinning, died of wounds in East Africa on December 10th, 1917, aged 28.

Elliott, H. C., Lieutenant Royal Engineers, second son of Dr. Christopher Elliott of Clifton, died at a base hospital on December 20th, 1917, of wounds received on December 8th.

Steyn, Stephen Sebastian Lombard, Lieutenant Royal Field Artillery, son of the late Dr. G. H. Steyn, killed in December, 1917, aged 26. He was educated at the Diocesan School, Rondebosch, South Africa, and at the University College, Oxford, where he was a Rhodes scholar of 1909. He was a noted Rugby football player, having played at three-quarter both for Oxford and for Scotland in 1911 and 1912. He got his commission on December 8th, 1914.

MEDICAL STUDENT.

Chalmers Cowan, Philip, Captain Manchester Regiment, attached Royal Flying Corps, is reported missing since November 8th, 1917, when he took part in an air combat in France. Captain Cowan was a second year medical student of Trinity College, Dublin, when he joined the Manchester Regiment in August, 1914, from the Dublin University O.T.C. He was promoted captain in October, 1916, and shortly afterwards joined the Royal Flying Corps. He was in his twenty-second year and was a son of Dr. P. C. Cowan of Ailesbury Road, Dublin.

[We shall be indebted to relatives of those who are killed in action or die in the war for information which will enable us to make these notes as complete and accurate as possible.]

HONOURS.

IN connexion with the New Year long lists of appointments, awards, and promotions were published in special supplements to the *London Gazette* on December 31st. The honours mentioned have been awarded to the following medical officers, all of whom belong to the A.M.S. or R.A.M.C. unless otherwise indicated:

Naval Awards in Recognition of Services during the War.

K.C.B. (CIVIL).

Surgeon-Generals: Wm. Henry Norman, C.B., R.N., George Lenthal Cheatle, C.B., C.V.O., R.N.

C.B. (CIVIL).

Surgeon-Generals: Arthur Edmunds, R.N., Wm. W. Pryn, R.N., James Lawrence Smith, M.V.O., R.N.

Deputy Surgeon-General Daniel Joseph Patrick McNabb, R.N.

C.M.G.

Fleet Surgeon E. H. Meaden, R.N.

D.S.O.

Staff Surgeon Henry Cooper, R.N.

For Valuable Services Rendered in Connexion with Military Operations in the Field.

C.B. (MILITARY DIVISION).

Surgeon-Generals: Richard Henry Stewart Sawyer, C.M.G., Henry Neville Thompson, C.M.G., D.S.O.

Colonel and Honorary Surgeon-General Bruce M. Skinner, C.M.G., M.V.O.

Colonels: Charles Mackie Begg, C.M.G., N.Z.M.C., Robert Hammill Firth, Anthony John Luther, Foster Reuss Newland, C.M.G., Alexander Dunstan Sharp, C.M.G., James Matthew Forrest Shine, Alfred Sutton, C.M.G., A.A.M.C., Hugh Champneys Thurston, C.M.G., James Barnett Wilson, C.M.G.

Lieut.-Colonel and Brevet Colonel (temporary Colonel) Frederick Smith, C.M.G., D.S.O.

Temporary Colonels: Sidney Maynard Smith, Alfred Henry Tubby, C.M.G.

Lieut.-Colonel and honorary Colonel Charles Joseph Trimble, C.M.G.

Lieut.-Colonel (temporary Colonel) Thomas Finlayson Dewar.

Lieut.-Colonel (acting Colonel) Arthur Russell Aldridge, C.S.I., C.M.G.

G.C.M.G.

Temporary Surgeon-General Sir George Henry Makins, K.C.M.G., C.B.

K.C.M.G.

Surgeon-General William Grant Macpherson, C.B., C.M.G.

Colonels and honorary Surgeon-Generals: James Murray Irwin, C.B., James Maher, C.B.

Temporary Colonels: Thomas Crisp English, C.M.G., James Purves Stewart, C.B.

C.M.G.

Colonels: George Walter Barber, D.S.O., A.A.M.C., Robert James Blackham, C.I.E., D.S.O., Ernest William Bliss, D.S.O., Edward George Browne, C.B., Robert Rupert M. Downes, A.A.M.C., Philip Cecil Harcourt Gordon, Alfred Ernest C. Keble, D.S.O., Charles Joseph MacDonald, Samuel Guise Moores, C.B., Charles William Profeit, D.S.O.

Temporary Colonel (Lieut.-Colonel R.A.M.C.T.F.) William Pasteur.

Lieut.-Colonel and Brevet Colonel (temporary Colonel) Howard Ensor, D.S.O.

Lieut.-Colonels (temporary Colonels): Arthur Thomas White, A.A.M.C., Daniel Davis Shanahan, D.S.O.

Lieut.-Colonels: Clarence Isidore Ellis, Charles Tilson Hudson, I.M.S.

Temporary Lieut.-Colonels: Leonard Stanley Dudgeon, Ernest Henry Starling, F.R.S.

Temporary honorary Lieut.-Colonel Nathan Raw.

For Services Rendered in Connexion with the War.

K.C.B. (MILITARY DIVISION).

Surgeon-General Sir David Bruce, C.B., F.R.S.

C.B. (MILITARY DIVISION).

Surgeon-General Francis John Jencken.

Colonels: William Coates, C.B.(Civil), Frederick Gault Finley, C.A.M.S.

Temporary Colonel (Lieut.-Colonel R.A.M.C.T.F.) Howard Henry Tooth, C.M.G.

Temporary Lieut.-Colonel Andrew Balfour, C.M.G.

Temporary honorary Lieut.-Colonel George Seaton Buchanan.

Major and Brevet Lieut.-Colonel Robert Markham Carter, I.M.S.

K.C.M.G.

Colonel and honorary Surgeon-General Michael William Russell, C.B.

Temporary Colonels: Charles Alfred Ballance, C.B., M.V.O., Archibald Edward Garrod, C.M.G., F.R.S.

C.M.G.

Colonels: Kenneth Cameron, C.A.M.C., Joseph Griffiths, Charles Henderson Melville, Charles Pye Oliver, K.H.P., George Septimus Rennie, C.A.M.C., Wallace Arthur Scott, C.A.M.C., Walter Langmuir Watt, C.A.M.C.

Temporary honorary Colonel Sir John Collie.

Lieut.-Colonel (honorary Surgeon-Colonel, temporary Colonel) William Mitchell Roocroft.

Lieut.-Colonels (temporary Colonels): Kenneth Smith, A.A.M.C., Douglas Murray McWhae, A.A.M.C.

Lieut.-Colonels: Henry Stewart Anderson, Louis Edward Barnett, N.Z.M.C., John Gordon, A.A.M.C., Arthur deCourcy Scanlan.

Honorary Lieut.-Colonel James Anderson Murdoch, A.A.M.C.

Temporary Lieut.-Colonels: James Hurley, A.A.M.C., John Charles Grant Ledingham, George Basil Price, Charles Morley Wenyon.

Temporary honorary Lieut.-Colonels: Harry Richard Kenwood, John Robertson.

Major (temporary Lieut.-Colonel) Thomas Mill, N.Z.M.C.

Major (acting Lieut.-Colonel) John Andrew Amyot, C.A.M.C.

Major Thomas Wardrop Griffith.

KNIGHT BACHELOR.

Major Andrew Macphail, C.A.M.C., Professor of History of Medicine, McGill University, Montreal.

C.I.E.

Lieut.-Colonel and Brevet Colonel Henry Francis Cleveland, V.H.S., I.M.S., Deputy Director-General, I.M.S.

Lieut.-Colonel Bawa Jiwan Singh, I.M.S., Inspector-General of Prisons, Bihar and Orissa.

Lieut.-Colonel Wm. Byan Lane, I.M.S., Inspector-General of Prisons, Central Provinces.

Lieut.-Colonel Henry Smith, I.M.S., Civil Surgeon, Amritsar, Punjab.

Major Henry Coddington Brown, I.M.S., Assistant Director, Central Research Institute, Kasauli.

Assistant Surgeon Kedar Nath Das, Professor of Midwifery, Campbell Medical School, Calcutta.

PROMOTIONS.

The following officers have been promoted to the rank indicated for distinguished service in the field:

To be Brevet Colonels.

Lieut.-Colonels (temporary Colonels): H. E. M. Douglas, V.C., C.M.G., D.S.O., J. Poe, D.S.O.

To be Brevet Lieut.-Colonels.

Majors (temporary Lieut.-Colonels): A. McMunn, S. L. Pallant, D.S.O., M. G. Winder, D.S.O.

Majors (acting Lieut.-Colonels): B. R. Dennis, G. W. G. Hughes, D.S.O.

Majors: R. T. Brown, D.S.O., J. T. Johnson, D.S.O., R. McCarrison, I.M.S.

To be Brevet Majors.

Captain (temporary Lieut.-Colonel) R. E. Kelly.

Captains (acting Lieut.-Colonels): G. H. Dive, D.S.O., P. S. Tomlinson.

Captain (temporary Major) K. W. Monsarrat.

Captains: R. C. Dun, G. W. Ellis, W. R. Galwey, M.C., A. D. Griffith, A. S. N. Macgregor, G. Patton.

Temporary Captains: N. Duggan, H. F. Marris.

The following officers have been promoted to the rank indicated for valuable services rendered in connexion with the war:—

To be Brevet Colonel.

Lieut.-Colonel R. J. C. Cottell, T. W. O'H. Hamilton, C.M.G., P. H. Johnston, C.M.G., C. W. M. Moullin, J. J. Pratt, I.M.S., S. J. Thomson, C.I.E., I.M.S., T. B. A. Tuckey.

Major and Brevet Lieut.-Colonel J. S. Bostock.

To be Brevet Lieut.-Colonel.

Major (acting Lieut.-Colonel) J. C. Furness.

Major (local Lieut.-Colonel) A. Wright.

Surgeon-Major F. F. MacCabe, Irish Horse.

Majors: W. E. A. Armstrong, I.M.S., T. W. Griffith, H. Jones, F. W. Mott, F.R.S., H. J. Parry, D.S.O., C. G. Spencer, W. K. Steele.

To be Brevet Major.

Captain (temporary Lieut.-Colonel) H. J. Stiles.

Captain (temporary Major) E. W. H. Groves.

Captain H. G. Gibson.

To be honorary Lieut.-Colonel.

Quartermasters and honorary Majors: A. Bruce, D. J. Gillman, H. G. Hasell.

DISTINGUISHED SERVICE ORDER.

Bar to the Distinguished Service Order.

Major (temporary Lieut.-Colonel) Wm. M. Bell Sparkes, D.S.O.

Captain (acting Lieut.-Colonel) Frank Worthington, D.S.O.

Temporary Captain (acting Lieut.-Colonel) James R. C. Greenlees, D.S.O.

Distinguished Service Order.

Lieut.-Colonels (temporary Colonels): Harold P. W. Barrow, C.M.G., Henry W. Grattan, Harry A. Hinge, C.M.G., John W. H. Houghton, George A. Moore, C.M.G., Charles A. Peters, C.A.M.C., Frederick S. Penny, C.M.G., Edward W. Slayter, C.M.G.

Lieut.-Colonels: James J. Black, A.A.M.C., Samuel R. Burston, A.A.M.C., Edward W. W. Cochrane, James E. Davey, C.A.M.C., Charles H. Dickson, C.A.M.C., Michael H. Downey, A.A.M.C., Thomas R. Elliott, Archibald N. Fleming, I.M.S., Thomas Fraser, Arthur H. Moseley, A.A.M.C., Thomas J. F. Murphy, C.A.M.C., Henry S. Newland, A.A.M.C., Charles T. H. Newton, N.Z.M.C., Edgar E. Powell, R.A.M.C., J. M. Y. Stewart, A.A.M.C., Alexander H. Thwaites, A.A.M.S., Arthur B. Ward, S.A.M.C., Arthur O. B. Wroughton.

Temporary Lieut.-Colonels: John Edward H. Davies, Thomas McC. Leask, C.A.M.C., Wm. R. Matthews, Charles E. Wassell, A.A.M.C.

Majors (temporary Lieutenant-Colonels): P. S. Clarke, S.A.M.C., Reginald T. Collins, John F. Crombie, Norman E. Dunkerton, George J. Houghton, Rochford N. Hunt, Thomas Kay, Gerard A. Kempthorne, Sydney M. W. Meadows, Clifford H. Reason, C.A.M.C., Henry F. Shea, Frederick Whalley, Charles R. White, James Wood.

Majors (acting Lieut.-Colonels): Alfred T. Bazin, C.A.M.C., Percy G. Bell, C.A.M.C., Richard Coffey, David L. Fisher, James J. Fraser, C.A.M.C., John M. Gover, Alexander Leggat, Wm. McCall, Thomas B. Moriarty, Wentworth F. Tyndale, C.M.G., Joseph Ward, James H. R. Winder.

Majors: Alan S. D. Barton, A.A.M.C., David D. Cade, A.A.M.C., Frederick Cameron, N.Z.M.C., Clement L. Chapman, A.A.M.C., Walter T. Finlayson, I.M.S., Roy S. McGregor, A.A.M.C., Edward H. Milner Moore, George S. Mothersill, C.A.M.C., John J. Power, A.A.M.C., C. John Tozer, A.A.M.C., David M. Tomory, S.A.M.C., Ernest B. Waggett, George W. W. Ware, Henry James Williams, A.A.M.C.

Captains (temporary Lieut.-Colonels): Francis L. Brandish, Arthur T. Falwasser, William I. Thompson.

Captains (acting Lieut.-Colonels): Edmund Alderson Frederick H. Bradley, Charles S. Brebner, Wm. Egan, Thomas S. Eves, Wm. R. Gardner, Harold Gibson, Arthur H. Habgood, Edward J. Kavanagh, M.C., John Du P. Langrishe, John A. Manifold, Ernest C. Phelan, M.C., Alexander M. Pollard, John W. L. Scott, George P. Taylor, M.C., Wm. Tyrrell, M.C., Andrew R. Wright.

Captain (temporary Major) Arthur W. Falconer.

Captains: Thomas Carnwath, Thomas S. Dunn, E.A.M.S., Harold A. T. Fairbank, Eric G. Gauntlett, Alexander J. Gibson, John G. Gill, M.C., Alfred G. Hebblethwaite, Basil Hughes, Stanley D. Large, M.C., Wm. McK. H. McCullagh, M.C., John Wm McNee, George W. Miller, George S. Parkinson, Alexander D. Stirling, James H. Thomas.

Temporary Captain (acting Lieut.-Colonel) Christopher V. Bulstrode.

Temporary Captains: John Anderson, Gordon A. McLarty, Hugh B. Owen, Uganda Medical Service, John F. G. Richards, Adrian Stokes.

(To be continued.)

The Albert medal has been conferred upon Captain C. R. Hoskyn, R.A.M.C., for the following heroic deed:

In France, on November 24th, 1916, as a result of a serious railway accident, a man was pinned down by the legs under some heavy girders. The wreckage was on fire, and the flames had already reached the man's ankles. Captain Hoskyn crawled into a cavity in the flaming wreckage, and, after releasing one of the man's legs, amputated the other, whereupon the man was drawn out alive, Captain Hoskyn retaining hold of the main artery until a tourniquet could be put on.

MENTIONED IN DISPATCHES.

SUPPLEMENTS to the *London Gazette* issued on December 24th and 28th, 1917, contain, in addition to the names published in our issue of December 15th, 1917, p. 806, a further list of officers of the A.M.S., R.A.M.C., Dominion Medical Corps, and the United States Army Medical Corps, mentioned by Sir Douglas Haig in his dispatch dated November 7th, 1917, for distinguished and gallant services and devotion to duty.

HEADQUARTERS STAFF.

Surgeon-Generals: Sir A. T. Sloggett, K.C.B., K.C.M.G., K.H.S., W. G. Macpherson, C.B., C.M.G., M. W. O'Keeffe, C.B., R. Porter, C.B., R. H. S. Sawyer, C.M.G.

Colonels (temporary Surgeon-Generals): C. H. Burtchaell, C.B., C.M.G., J. M. Irwin, C.B., B. M. Skinner, C.M.G., M.V.O., H. N. Thompson, C.M.G., D.S.O.

Colonels: de B. Birch, C.B., V.D., E. G. Browne, C.B., G. Cree, C.B., C.M.G., R. H. Firth, P. C. H. Gordon, S. Hickson, C.B., A. J. Luther, S. Macdonald, C.M.G., R. L. R. Macleod, C.B., S. G. Moores, C.B., F. R. Newland, C.M.G., J. M. F. Shine, W. T. Swan, C.B., H. C. Thurston, C.M.G., J. B. Wilson, C.M.G., R. W. Wright, C.M.G., C. A. Young, C.M.G.

Brevet Colonel (temporary Colonel) T. W. Gibbard, K.H.S.

Temporary Colonel H. McI. W. Gray.

Brevet Colonel H. Ensor, D.S.O.

Lieut.-Colonels (temporary Colonels): H. P. W. Barrow, C.M.G., R. J. Blackham, C.I.E., D.S.O., E. W. Bliss, D.S.O., A. W. N. Bowen, D.S.O., F. R. Buswell, C.M.G., T. F. Dewar, H. E. M. Douglas, V.C., D.S.O., C.M.G., H. N. Dunn, D.S.O., O. W. A. Elsner, D.S.O., H. W. Grattan, H. A. Hinge, C.M.G., J. W. H. Houghton, T. P. Jones, C.M.G., G. A. Moore, C.M.G., G. J. A. Ormsby, D.S.O., J. Poe, D.S.O., C. E. Pollock, D.S.O., C. W. Profeit, D.S.O., H. V. Prynne, M. M. Rattray, D.S.O., D. D. Shanahan, D.S.O., A. D. Sharp, C.M.G., E. W. Slayter, C.M.G., A. G. Thompson, D.S.O., H. S. Thurston, C.B., C.M.G.

Lieut.-Colonels (acting Colonels): R. W. Clements, D.S.O., W. E. Hudlestone, D.S.O.

Lieut.-Colonels: A. Chopping, C.M.G., J. S. Gallie, D.S.O., H. C. R. Hime, H. G. Martin.

Brevet Lieut.-Colonel E. Ryan, D.S.O.

Major (acting Lieut.-Colonel) W. F. Tyndale, C.M.G.

Majors W. F. McAllister-Hewlings, J. FitzG. Martin, C.M.G., C. G. Thomson, D.S.O., L. V. Thurston, D.S.O., A. C. Turner, G. W. W. Ware.

Captains: T. H. Balfour, M.C., W. S. S. Berry, G. O. Chambers, A. J. Clark, M.C., G. W. Ellis, A. J. Gibson, J. G. Gill, S. S. Greaves, M.C., A. G. Hebblethwaite, A. H. Heslop, D.S.O., S. D. Large, M.C., D. C. Macdonald, G. S. Parkinson, G. W. Smith, R. E. Todd, A. Wilson, M.C., A. R. Wright.

Temporary Captains: W. H. Alderton, G. D. Hindley, K. W. Mackenzie.

Lieutenant (temporary Captain) C. W. Treherne.

Consultants.

Surgeon-Generals: Sir A. A. Bowlby, K.C.M.G., K.C.V.O., Sir G. H. Makins, K.C.M.G.

Colonels: A. Fullerton, C.M.G., Sir W. P. Herringham, C.B., W. Pasteur, S. M. Smith, A. B. Soltau, C.M.G., C. G. Watson, C.M.G.

Lieut.-Colonel C. S. Myers.

ROYAL ARMY MEDICAL CORPS.

Lieut.-Colonels: T. R. Elliott, C. I. Ellis, T. Fraser, H. A. L. Howell, J. C. Jameson, W. R. Matthews, A. H. Morris, A. O. B. Wroughton.

Temporary Lieut.-Colonels: C. J. Trimble, C.M.G., V.D., J. E. H. Davies.

Temporary honorary Lieut.-Colonel N. Raw.

Acting Lieut.-Colonel C. S. Brember.

Majors (temporary Lieut.-Colonels): W. Bennett, D.S.O., E. B. Bird, D.S.O., R. Coffey, R. T. Collins, J. F. Crombie, N. E. Dunkerton, R. F. M. Fawcett, D.S.O., P. J. Hanafin, D.S.O., W. J. S. Harvey, D.S.O., G. J. Houghton, G. W. G. Hughes, D.S.O., R. N. Hunt, A. E. S. Irvine, T. Kay, H. B. Kelly, D.S.O., G. A. Kempthorne, S. M. W. Meadows, A. C. Osburn, D.S.O., W. F. Roe, D.S.O., W. M. B. Sparkes, D.S.O., F. Whalley, J. H. R. Winder, M. G. Winder, D.S.O., J. Wood.

Majors (acting Lieut.-Colonels): P. R. Ash, B. R. Dennis, A. D. Ducat, H. Fulton, J. M. Gover, F. W. Johnson, E. F. Q. L'Estrange, W. McCall, E. C. Montgomery-Smith, D.S.O., T. B. Moriarty, J. Nightingale, H. F. Shea.

Majors: W. J. P. Adye-Curran, T. A. Barron, G. A. Benson, H. D'A. Blumberg, T.D., T. S. Coates, A. W. A. Irwin, G. W. Miller, E. H. M. Moore, J. S. Y. Rogers, D.S.O., M. Sinclair, J. W. West.

Temporary Major (acting Lieut.-Colonel) E. Alderson.

Temporary honorary Majors: C. W. M. Hope, T. Houston.

Brevet Major H. F. Panton, D.S.O., M.C.

Captains (temporary Lieut.-Colonels): J. Barkley, W. J. E. Bell, D.S.O., J. D. Bowie, D.S.O., F. H. Bradley, A. T. Falwasser, W. R. Gardner, E. J. Kavanagh, M.C., J. de P. Langrishe, A. M. Pollard, J. Robertson, N. C. Rutherford, D.S.O., S. M. Smith, G. P. Taylor, M.C., W. I. Thompson, W. Tyrrell, M.C.

Captains (acting Lieut-Colonels): F. L. Bradish, H. N. Burroughes, H. G. W. Dawson, G. H. Dive, D.S.O., W. Egan, T. S. Eves, H. Gibson, A. H. Habgood (S.R.), A. Irvine-Fortescue, E. C. Phelan, M.C., H. C. D. Rankin, R. T. C. Robertson (S.R.), J. W. L. Scott, F. Worthington, D.S.O.

Captain (temporary Major, acting Lieut.-Colonel) T. A. Green.

Captains (temporary Majors): J. D. Fiddes, A. C. F. Turner, D.S.O.

Captains: J. G. Anderson, S. R. Armstrong (S.R.), R. P. Ballard (S.R.), J. H. Bayley, M.C. (S.R.), A. J. Beveridge (S.R.), T. R. H. Blake, M.C., R. A. Broderick, A. S. Bruzaud, D. Buchanan, E. D. Caddell, M.C., W. K. Campbell, D.S.O., F. C. Chandler, P. J. Chissell, T. C. Clarke, J. Dale, R. M. Davies, A. H. T. Davis, W. H. Davison, J. W. Dew, C. K. G. Dick, R. C. Dun, J. Dundas, A. H. Falkner, J. McK. Ferguson, H. J. B. Fry, C. E. H. Gater (S.R.), R. E. Gibson, H. Goodman, H. B. Graham, A. H. Greg, T. W. Hancock, A. J. Hawes, W. S. Haydock (S.R.), J. H. Hebb, H. Henry, W. Hunt, M.C. (S.R.), A. H. Huycke, R. Jacobs, A. E. Jury, C. M. Kennedy, R. Kennon, G. D. Laing, J. H. Lloyd, P. MacCullum (S.R.), S. McCausland, W. McK. H. McCullagh, M.C. (S.R.), J. P. McGreehin, J. W. McNee (S.R.), D. G. McRae, J. S. Manford, H. F. Marris, S. S. Meighan, A. D. Moffat, F. R. H. Mollan (S.R.), H. S. Moore (S.R.), C. B. Moss-Blundell, J. C. Newman, C. Nicholson (S.R.), H. S. Palmer, A. C. Pearson, G. E. Pepper (S.R.), J. Pinder, G. S. Pirie (killed), J. M. Plews, R. B. Price, W. Raffle, J. Rafter (S.R.), R. T. Raine, J. Ramsay, J. F. G. Richards, F. A. Roper, P. J. Ryan, J. C. Sale, D.S.O., M.C., H. A. Sandiford, J. J. M. Shaw (S.R.), C. N. Smith, W. Sneddon, J. C. Sproule, J. Stephenson (S.R.), A. D. Stirling, E. S. Stork, D.S.O., F. Sykes (S.R.), J. H. Thomas, J. Walker (S.R.), D. L. Wall, W. S. Wallace (M.C.), G. D. Watkins, D.S.O., F. H. C. Watson, F. W. White, J. B. Williamson (S.R.), W. F. Wood, D.S.O. (S.R.).

Temporary Captain (temporary Lieut-Colonel) H. Faulkner.

Temporary Captains (acting Lieut.-Colonels): C. D. Pye-Smith, D.S.O., M.C., J. R. C. Greenlees, D.S.O.

Temporary Captains: E. A. Aldridge, J. Alexander, R. C. Alexander, F. H. Allfrey, J. Anderson, L. Anderson, D.S.O., G. W. Armstrong, D.S.O., W. H. Attlee, G. T. Baker, J. H. Bankes, J. H. Barry, D.S.O., M.C., N. Mc. C. Boyce, E. Boyers, R. Charles, G. S. Clancy, A. Climie, J. M Campbell, C. D. Coyle, F. W. Craig, G. McI. Dale, A. W. Dennis, C. F. Drew, J. C. Dunn, D.S.O., M.C., I. Feldman, J. H. Fletcher, D.S.O., M.C., A. Fraser, J. Gibson, W. B. Gordon, E. H. Griffin, D.S.O., M.C., E. L. M. Hackett, A. E. Hallinan, A. G. P. Hardwick, R. Herdman, W. J. Hirst, R. McC. Hill, D.S.O., R. D. Laurie, D. Lees, D.S.O., O. C. Link, J. W. Linnell, T. L. Llewellyn, H. L. McCormick, A. L. McCreery, F. C. Macdonald, A. Macintyre, D. MacIntyre, E. C. Mackay, W. Mackenzie, G. A. McLarty, G. D. McLean, I. C. Maclean, D.S.O., M.C., W. R. P. McNeight, J. C. Mackwood, J. Manuel, H. W. Moir, H. Mortimer, J. M. Moyes, H. G. Oliver, M.C., J. B. Orr, D.S.O., M.C., J. I. O'Sullivan, H. A. Pallant, D.S.O., M.C., H. Y. Riddell, R. C. Robertson, R. S. Ross, G. W. R. Rudkin, M. P. Scanlon, H. L. Shelton, S. J. Simpson, V. F. Soothill, T. Stansfield, J. L. Stewart, M.C., A. Stokes, D. J. Stokes, H. S. Sugars, D.S.O., M.C., R. I. Sullivan, J. Tate, J. N. L. Thoseby, G. G. Timpson, H. S. Turner, M.C., V. C. W. Vickers, C. D. Walker, J. Walker, K. M. Walker, F. E. S. Willis, A. Wilson, F. B. Winfield, P. R. Woodhouse, C. S. E. Wright.

Temporary honorary Captains: E. H. Hicks, C. McNeil.

Lieutenants (temporary Captains): J. H. Boag, J. La F. Lauder, D.S.O., M.C.

Temporary Lieutenants: D. H. Collingham, W. J. Isbister, H. S. Johnston, D. A. H. Moses.

Quartermaster and honorary Major J. Dunn.

Quartermaster and honorary Captain W. Wilson.

Quartermasters and honorary Lieutenants: C. W. Atkins, E. Birch (honorary Major), J. Enwright, J. Forman, W. Gough.

Temporary Quartermasters and honorary Lieutenants: E. C. Bowen, M. W. Colahan, G. F. Drayson, G. Foster, T. H. Griggs, R. L. Masters, H. G. Miller, T. Newling, W. Parnell, J. H. Turner.

UNITED STATES ARMY MEDICAL CORPS.

Lieut.-Colonels: H. Cabot, C. C. Collins, M. De Laney, J. D. Fife, H. L. Gilchrist, R. U. Patterson.

Majors: G. W. Crile, H. Cushing, L. L. Hopwood, V. H. Kazanjian.

FRIENDS' AMBULANCE UNIT.

Dr. H. Nockolds.

AUSTRALIAN IMPERIAL FORCE.

Staff.

Colonels: G. W. Barber, D.S.O., A.A.M.C.; W. W. Hearne, D.S.O., A.A.M.C. (killed); R. B. Huxtable, D.S.O., V.D., A.A.M.C.; A. Sutton, C.M.G., A.A.M.C.; A. T. White, V.D., A.A.M.C.

Majors (temporary Lieut.-Colonels): J. H. Anderson, A.A.M.C.; R. S. McGregor, A.A.M.C.

Majors: H. K. Fry, D.S.O., A.A.M.C.; W. Vickers, A.A.M.C.

Army Medical Corps.

Lieut.-Colonels (temporary Colonels): J. A. Dick, M. H. Downey, A. E. Shepherd.

Lieut.-Colonels: J. J. Black, S. R. Burston, A. G. Butler, D.S.O.; H. H. B. Follitt, F. A. Maguire, A. H. Moseley, H. S.

Newland, J. S. Purdy, D.S.O., J. M. Y. Stewart, V.D., C. E. Wassell, J. R. Webb.
Honorary Lieut.-Colonel E. W. Hayward.
Major (temporary Lieut.-Colonel H. V. P. Conrick, D.S.O.
Majors: S. V. Appleyard, D.S.O., A. S. D. Barton, F. L. Bignell, L. W. Bond, D.S.O., H. P. Brownell, D.S.O., D. D. Cade, C. L. Chapman, W. B. Craig, D.S.O., W. M. A. Fletcher, A. C. Fraser, R. I. Furber, D.S.O., W. A. Hailes, D.S.O., E. L. Hutchinson, D.S.O., W. W. S. Johnston, D.S.O., M.C., H. B. Lee, D.S.O., M.C., R. M. McMaster, D.S.O., R. B. North, J. J. Power, G. S. Robinson, M.C., C. J. Tozer, H. J. Williams.
Captains: H. F. Dunstan, G. S. Elliott (killed), F. W. Fay, L. J. Hunter, J. T. Jones, M.C., I. B. Jose, A. Juett, C. F. Robinson, J. R. Tillett (died of wounds), E. D. Watson, A.A.D.C.
Quartermaster and honorary Major T. F. Hall.
Quartermaster and honorary Captain J. I. Anderson.

CANADIAN FORCES.
Staff.
Colonel A. E. Ross, C.M.G., C.A.M.C.
Lieut.-Colonels (temporary Colonels): H. M. Jacques, C.A.M.C., D.S.O., C. A. Peters, C.A.M.C., R. P. Wright, D.S.O., C.A.M.C.
Major (temporary Colonel): A. E. Snell, D.S.O., C.A.M.C.

Canadian Army Medical Corps.
Lieut.-Colonels: R. J. Blanchard, J. E. Davey, C. H. Dickson, J. A. Gunn, J. Hayes, T. J. F. Murphy, F. W. E. Wilson.
Majors (temporary Lieut.-Colonels): A. T. Bazin, J. N. Gunn, T. McC. Leask, C. H. Reason.
Majors (acting Lieut.-Colonels): P. G. Bell, J. J. Fraser.
Majors: D. J. Cochrane, G. S. Mothersill, S. Paulin.
Captains: L. E. Clark, W. J. E. Mingie.
Lieutenant W. McL. Moore (Canadian Red Cross).
Quartermaster and honorary Captain J. E. Tulloch.

NEW ZEALAND FORCE.
Staff.
Colonel C. M. Begg, C.M.G., N.Z.M.C.

Medical Corps.
Colonel D. J. McGavin, D.S.O.
Lieut.-Colonels: D. N. W Murray, D.S.O., J. H. Neil
Majors: F. G. Cameron, K. MacCormick, D.S.O., R. H. Walton.
Captains: H. M.Goldstein, M.C., I. N. Spedding.

SOUTH AFRICA.
Medical Corps.
Lieut.-Colonel A. B. Ward, commanding South African General Hospital.
Quartermaster and honorary Lieutenant W. Richardson.

BRITISH WEST INDIES REGIMENT.
Temporary Surgeon Captain W. S. Mitchell.

INDIAN ARMY.
Indian Medical Service.
Lieut.-Colonel A. N. Fleming, Major J. J. Urwin.

The list also contains a number of names of N.C.O.'s and men of the R.A.M.C., A.A.M.C., C.A.M.C., N.Z.M.C., S.A.M.C., and members of the various nursing services.

THE name of temporary Captain Frederick Edward Saxby Willis, R.A.M.C., attached Seaforth Highlanders, was accidentally omitted from the list of recipients of the Military Cross published in our issue of December 22nd, 1917, p. 839.

NEW YEAR HONOURS.

THE following New Year Honours have been conferred upon medical men, in addition to those specifically awarded for services in the field and in connexion with the war, published at pp. 30-32. On behalf of the medical profession we offer congratulations to all those of our number whose distinguished services have thus been recognized:

G.C.V.O.
Sir Bertrand Dawson, K.C.V.O., C.B., M.D., Physician in Ordinary to H.M. The King, Physician London Hospital.

K.C.V.O.
Lieut.-Colonel Hugh Malliinson Rigby, R.A.M.C., F.R.C.S., Surgeon to H.M. The King's Household and to H.M. Queen Alexandra's Household, Surgeon London Hospital.

M.V.O.
Staff Surgeon Louis Greig, R.N., M.B., Ch.B.

K.C.B.
Sir George Newman, M.D., Principal Medical Officer to the Board of Education.

KNIGHTHOOD.
Dr. Barclay J. Baron, Consulting Physician for Diseases of the Throat and Nose, Bristol General Hospital; ex-President of the Bath and Bristol Branch of the British Medical Association.

Dr. Thomas J. Horder, Assistant Physician St. Bartholomew's Hospital.
Dr. John Phillips, Emeritus Professor of Obstetric Medicine, King's College; Consulting Obstetric Physician, King's College Hospital.
Mr. Harold J. Stiles, M.B., C.M., F.R.C.S.Edin., Surgeon Royal Edinburgh Hospital for Sick Children.

KAISAR-I-HIND GOLD MEDAL.
Dr. Ernest Neve, Surgeon Mission Hospital, Srinagar, Kashmir.

Scotland.

THE PROPOSED MINISTRY OF HEALTH.

THE Royal College of Physicians of Edinburgh has issued a statement dealing with the question of the establishment of a Ministry of Health. Under the privileges conferred by its charter it is the duty of the College to consider "any matters affecting the general interests of the medical profession and the public." The College has accordingly considered this question, and has accepted the general proposition that it would be to the advantage of the public health were the various existing health agencies co-ordinated and brought under the supervision, control, and initiative of a board of health, constituted on the lines suggested in the statement, and presided over by a Minister of State. The only aspect of the question which leads to a divergence of view is as to the desirability of proceeding with a scheme of such magnitude at this strenuous and anxious time in the nation's history, when the medical forces of the country are large disorganized. In the circumstances the prevailing opinion of the College is that the establishment of a Ministry of Health ought to be postponed until after the war.

Statement by the Royal College of Physicians of Edinburgh.

The Royal College of Physicians of Edinburgh was erected by Royal Charter granted by His Majesty King Charles the Second, 29th November, 1681, and incorporated anew by Royal Charter granted by Her Majesty Queen Victoria, 16th August, 1861. The Royal College has been, and continues to be, largely concerned with matters affecting the health of the nation. It has taken considerable part in developing medical science and practice. It is therefore particularly interested in all proposals which have for their aim the erection of a State Department of Health. The Fellows of the College have given careful consideration to the subject. The statement which follows is the outcome of deliberations which had regard to the great questions of health and the urgent need of their recognition and effective handling by the State. The standpoint of the College is frankly medical, not political or departmental.

The administration of health measures has in the past been developed in connexion with a number of Government Departments, such as the Local Government Board, Home Office, Board of Education, Insurance Commission. Each of the several departments has worked within the limits of certain Acts of the Legislature dealing with definite subjects and conferring definite powers. The health of the community has received benefit from the work of the departments; but the operations of the departments have not attained that comprehensive measure of success which the extent and gravity of the health problem demand.

As regards health questions, the sphere of the several departments is limited, and, with increasing legislation, the overlapping which inevitably follows from their separation becomes steadily aggravated. A fundamental weakness lies in the fact that in none of the departments concerned is the control vested in a minister appointed primarily to deal with health problems.

From this division of interest and responsibility departmental difficulties are apt to arise; policy in regard to matters pertaining to health tends to become subject to considerations of departmental jurisdiction; and the essential interest of health questions is liable to be obscured. Under the restrictions of the present system it has been impossible to evolve concerted means for dealing with the complex and ever widening problems of national health. Not until these restrictions are removed will it be possible to attain effective and adequate machinery.

What is required is the creation of a ministry which shall concern itself with health matters pure and simple, and to whose jurisdiction shall be transferred from other departments the operations of all existing enactments in so far as they deal with health. This opens up another aspect of the question, namely, the immense extent of the issues involved. Existing Acts deal only with sections and fragments of the subject. A multitude of conditions affecting health are not included in the purview of the Acts, and have hitherto been left untouched.

The Minister of Health must handle the whole problem. He must be concerned not only with questions already dealt with by the Legislature, such as infectious diseases, infant welfare,

etc., but also with fresh questions arising from time to time, for example, conditions causing or affecting forms of sickness and disease not yet included within the operation of Health Acts. Such matters are frequently brought to light in the work of the medical profession. Beyond the treatment of individual cases by medical practitioners there are large questions concerning conditions to which sickness is due. These are certainly matters for a Ministry of Health.

To enable the Ministry to carry out its wide and highly complex functions, a Board of Health should be constituted, and its members selected in such a way as to ensure that the attention of the Ministry of Health would be directed to all matters affecting health.

The Royal College of Physicians of Edinburgh is, therefore, of opinion that it is essential, in the public interest, that a Government department should be erected to deal exclusively with health.

The Royal College suggests:

I. That the department should consist of a Minister and a Board of Health, of which the Minister should be chairman, and whose members should be elected on the ground of experience and interest in matters pertaining to health.

II. That the purposes of the department should be: (1) To administer the Health Acts. (2) To devise executive measures for dealing with health problems not hitherto defined by legislative measures. (3) To institute inquiries with a view to introduce measures for improving conditions affecting health. (4) To develop facilities for investigation of problems in health and disease as they may arise.

III. That the Board should include three groups of members: (1) Administrative officials. (2) Laymen with wide experience of health problems, or in the administration of hospitals and other health agencies, official or voluntary. (3) Medical members who have had experience in: (*a*) public health service; (*b*) general practice; (*c*) special clinical department, including industrial medicine; (*d*) medical research; (*e*) medical statistics.

In name and by authority of the College,
WILLIAM RUSSELL, M.D.,
President.
A. DINGWALL-FORDYCE, M.D.,
Secretary.

Edinburgh, December 6th, 1917.

PRELIMINARY EXAMINATIONS AT THE UNIVERSITIES.

The report of the Joint Board of Examiners of the Scottish Universities contains statistics of the passes and failures at the medical preliminary examination. At St. Andrews 17 entered—4 failed in all subjects entered for, 9 passed in all subjects entered for, 1 passed in two subjects and 3 in one subject; at Glasgow 106 entered—39 failed in all subjects, 47 passed in all subjects, 5 in two subjects, and 15 in one subject; at Aberdeen 24 entered—2 failed in all subjects, 13 passed in all subjects, 1 in two subjects, and 8 in one subject; at Edinburgh 72 entered—19 failed in all subjects, 30 passed in all subjects, 1 in three subjects, 7 in two, and 15 in one.

SCOTTISH JUBILEE NURSES.

The annual report of the Scottish Branch of the Queen Victoria's Jubilee Institute for Nurses states that 121 were absent on military nursing service and that 10 had been mentioned in dispatches or had received war honours. Nurses were doing good work in many lonely districts of Scotland under the Highlands and Islands Medical Service Board, and also for infant welfare schemes. There are now 276 nursing associations in affiliation with the Scottish Branch. Dr. J. Haig Ferguson, in seconding the adoption of the report, said that there was no more welcome visitor from the point of view of the doctor or the patient than the Jubilee nurse, and added that all should be enrolled with the Central Midwives Board. Dr. Angus Macdonald paid a tribute to the services of the nurses from the point of view of the general practitioner.

Ireland.

PRESENTATION OF BOYLE MEDAL.

AT a recent scientific meeting of the Royal Dublin Society, when Lord Rathdonnell, President, was in the chair, the Boyle Medal was presented to Professor J. A. McClelland, Sc.D., F.R.S.

The report of the committee of the honorary officers, recommending the award, adopted by the Committee of Science and the Council, stated that the claim of Professor McClelland to the medal was based upon research in many branches of science, but primarily in those which deal with ionization as resulting from additions of electrons to gascous molecules, or aggregates of such, and with the more recently discovered forms of radiation associated pre-eminently with radio-activity. His work on ionization had been used by Sir J. J. Thomson in his work on conductivity through gases, and his discoveries in secondary radiations had been the starting point of much similar work in England and abroad. More recently Professor McClelland had served with distinction on the Advisory Council instituted by the State. The occasion was the sixth on which the medal had been presented. Professor J. Joly, F.R.S., enlarged on some points in Professor McClelland's papers, and Professor H. Conway, F.R.S., added a tribute to the industry of the medallist.

The President presented the medal with a few well-chosen words, expressing the goodwill of all sections of the society, and Professor McClelland, having acknowledged the honour, remarked that the future for research work was becoming very bright, for the industrial combinations to further research would lessen the difficulty experienced by those who devoted themselves to it in finding no openings afterwards.

VACCINATION DEFAULTERS.

The Local Government Board has pointed out to the guardians that the number of vaccination defaulters in Wexford Union has increased to 3,306, and has urged them to continue prosecutions until the whole list is exhausted. The clerk announced that it had been decided to prosecute in fifty-six cases.

An additional war bonus of £7 a year each has recently been granted by the Derry Guardians to the eight maternity nurses in the union.

England and Wales.

LONDON ASSOCIATION OF MEDICAL WOMEN.

AT a meeting of the London Association of Medical Women on December 11th, with Lady Barrett in the chair, a discussion took place on (*a*) the advisability of a special department for maternity and child welfare under a Ministry of Health, and (*b*) the merits of municipal as opposed to voluntary control in maternity and child welfare. Miss Harris, of the Women's Co-operative Guild, said the subject was of special importance now, on account of the many new occupations open to women, which might seriously affect their health in pregnancy, whereas after the war there would probably be limited employment and shortage of food. There were two main difficulties to be met: (1) bad environment, and (2) poverty, standing in the way of proper medical attention and nursing. National and municipal action was essential, individual efforts being inadequate. The two great national agencies concerned with the health of the people were national health insurance and the public health authorities. The former allowed (*a*) maternity benefit of 30s. to insured women and wives of insured men, but it left paupers out of account, and in any case the amount was insufficient. (*b*) Payment of sickness benefit to insured married women; this was unsuitable, as the test was incapacity to work and the allowance was only made after three days' illness, while the proposal to convert maternity benefit into a marriage dowry was unsound. The Local Government Board issued valuable reports and paid 50 per cent. of the cost of infant welfare centres established by local authorities. But the distribution, remuneration, and training of midwives needed much revision. There was a shortage of maternity hospitals and homes; dinners and milk should be provided for expectant and nursing mothers, and there should be a supply of home helps. A Ministry of Health should have a strong maternity department, largely staffed by women. Mrs. Hood said that the women of the Co-operative Guild were looked upon as the thrifty working class. They disliked charity and felt that during the period of maternity they had a right to care and attention, just as their children had a right to free education. Municipal was preferable to voluntary control and savoured less of charity. Antenatal centres were much appreciated by the working classes and maternity hospitals were essential. Dr. Christine Murrell thought the endowment of motherhood might solve the question. She advocated the union of municipal and voluntary control in maternity and child welfare work; the municipal

body would then find the funds and the voluntary factor would supply the initiative, while the scheme would not be hampered by cumbersome machinery. Dr. Janet Lane-Claypon said that maternity hospitals were very few in the provinces, but adequate in London, provided the beds were used for abnormal cases only. She thought there would be great difficulty in safeguarding the home during the mother's absence. She was strongly in favour of a combined male and female staff at the head of a maternity department under the Ministry of Health. Lady Barrett said that the provision of beds for pregnancy sickness was inadequate even in London. It was obvious that voluntary initiative had been largely responsible for the public interest in the work, but it seemed impossible to make the work uniform and complete without some central controlling body which should supply the funds. There was no reason, however, why municipal authorities should not very largely make use of the voluntary help already being given.

THE LIVERPOOL MEDICAL INSTITUTION.

The first pathological meeting of the Liverpool Medical Institution was held on December 20th, 1917, Dr. Macalister, the President, in the chair. Several specimens, macroscopic and microscopic, were shown, of which the following were of special interest: Rapidly growing sarcoma following injury with secondary deposits in the liver, sarcoma of the stomach, aneurysm of the heart rupturing into the pericardium, endothelioma of the finger, and granular kidney with cerebral haemorrhage in a boy aged 15. Mr. Thurstan Holland exhibited skiagrams of two cases of congenital deformity of the bones of the hands and feet, showing fusion of some of the bones of the tarsus and metatarsus, as well as of the carpus and metacarpus. The patients complained of little or no discomfort, and such a condition could not have been diagnosed in the absence of *x* rays. Apparently very few cases of this deformity are on record, and they were only discovered through the patients complaining of never being able to move the extremities quite as freely as desirable. Captain Cone, M.O.R.C., U.S.A., read an interesting paper on some pathological conditions of peripheral nerves resulting from war injuries. He illustrated his points by numerous lantern slides, and supported the view, on the strength of his observations, that in separated nerves sensibility of the structures beyond the site of lesion was maintained through a nexus established between the uninjured nerve fibrils in the skin and adipose tissue. Captain Cone was able to show the feasibility of such a connexion by microscopic slides. He was unable to show whether intramuscular nerve filaments performed a similar function. He thought that growth from nerves uninjured and situated in the skin and adipose tissue linked up with branches and fibrils from the distal ends of the severed nerve trunks.

Correspondence.

THE MINISTRY OF NATIONAL SERVICE.

SIR,—The letter of your correspondent last week raises some general questions, as, for instance, the natural history of committees, on which, were time and paper not so scarce, it might be interesting to speculate, and at least one matter of detail deserving very careful consideration. He says, somewhat cynically, of the Medical Department of the Ministry of National Service, that it is too young to be open to much criticism. I am told by those who profess to know that the medical arrangements of that department are working well in spite of not a few difficulties, among which must be reckoned the unpopularity of the military department it in part replaced. Your correspondent sees that one of its chief dangers is the magnitude of the task thrust upon it, but it is not clear that he appreciates fully how great this task may become. If it proves its usefulness, and other Ministries learn to depend upon it for information and guidance in medical matters, it may be called upon to take charge of a very much larger field in civil life, and eventually—possibly in no long time—to undertake, though not, perhaps, under the same auspices, much other work that will need to be done as a consequence of the social changes set up by the war.

As yet the profession does not speak with a single voice. The British Medical Association aspires to do so, but has never had the political wisdom to come to an understanding with the Colleges, which for their part show interest in the general affairs of the profession only spasmodically, and as it were grudgingly. Within the Association there is dissension, one section denouncing it for neglecting the interests of panel practitioners and the other decrying it because it thinks too much of them.

The Ministry of National Service has very important duties which cannot end with the war. The civilian profession is for the first time really represented in the Government, and it has such an opportunity through this representation as may serve to bring to fruition many avowed professional aims and to re-establish it on a basis sufficient to meet all impending socio-economic changes (the probabilities of which are undoubted) while resolving its present condition of transition.

The immediate need is the more wide distribution of Government medical work on a part-time basis, the ideal being that every practitioner be called upon to do an equal amount of this in addition to discharging his more general obligations to the civilian population. When the other work consequent on the incidence of the war requires to be done, the present system can, if necessary, be applied with any required modification.—I am, etc.,

January 1st. Y.

THE TREATMENT OF TRAUMATIC PARAPLEGIA.

SIR,—The article in your issue of December 29th, 1917, upon "The treatment of paraplegia from gunshot or other injuries of the spinal cord," calls for serious criticism. Colonel Mayo-Robson asks: "If we can by operative means remedy paralysis due to nerve destruction by transplanting new nerve tissue or part of the spinal cord of one of the lower animals, as I proved possible some years ago, why should we not be able to obtain return of function in a damaged spinal cord by excising the injured section and transplanting into the gap thus made a portion of the spinal cord of a recently killed rabbit, or perhaps better, of a sheep or calf?" The cases quoted of restoration of function by grafting[1] refer to injuries of peripheral nerves, which differ in at least one essential respect even from the medullated fibres of the spinal cord, namely, in possessing a neurilemma sheath. This sheath plays a critical and apparently indispensable part in regeneration. Further, the structure and function of a peripheral nerve are infinitely less complex than those of the spinal cord.

The case against the experimental operation suggested by Colonel Mayo-Robson rests upon definite experimental facts. The whole question of the possibility of regeneration of the spinal cord, together with many references to the literature on the subject, is discussed in Schäfer's *Textbook of Physiology*, 1900, p. 878. Therein it will be found that no evidence of the possibility of regeneration of the spinal cord has been found by experiments upon animals higher in the scale than *Lacerta viridis*.

The account of the two cases quoted by Colonel Mayo-Robson as encouraging the belief that regeneration might occur, is so lacking in detail as to be quite unconvincing. The danger that the proposed operation may be carried out is intensified by two facts—first, that it is suggested by a surgeon of such high standing, and secondly, that patients with recoverable, or partly recoverable, lesions, disheartened by the slowness of their progress and the apparent hopelessness of their condition, may be, as Colonel Mayo-Robson says, "willing to undergo operation even if it gives the barest possibility of success." It is true that Colonel Mayo-Robson specifies that only the hopeless cases should be thus operated upon, but the single case which he cites as having so far been submitted to operation was one of incomplete division of the cord. Further, the diagnosis between incomplete and complete lesions, more especially in the earlier weeks or even months, before the urinary tract has become irremediably infected, is still often a matter of great difficulty. At the present time there exists neither experimental nor clinical evidence that an operation of grafting upon the spinal cord does offer even the remotest possibility of

[1] BRITISH MEDICAL JOURNAL, September 13th, 1890, and October 31st, 1896.

success, and it seems cruel to hold out to these unfortunate patients any hope whatever that, by submitting to a severe operation, by no means intrinsically devoid of danger, their condition may be benefited.—I am, etc.,

London, W., Jan. 2nd. PERCY SARGENT.

PRIMARY EXCISION OF GUNSHOT WOUNDS OF THE ELBOW-JOINT.

SIR,—I was particularly glad to see the letters you have recently published on this subject from Messrs. Mansell Moullin and Swan, because, having in the earlier stages of the war to undertake secondary excisions of some difficulty for such cases in a late stage after they had gone through the often serious septic period, I urged in a lecture delivered at Guy's in April, 1916, and subsequently published, a wider application of primary excision. Undoubtedly primary excision was at that time being practised by some surgeons both for the elbow and shoulder, and I have since had occasion to know that the utility of these operations is generally recognized at casualty clearing stations. But I do not think I am quite in agreement with Mr. Swan as to his use of the term primary, and I gather from his letter that Mr. Mansell Moullin shares my view when he urges that these operations should be undertaken, as they often are, at casualty clearing stations. As Mr. Swan very rightly points out, excision at the base gains for the patient very definite advantages, not the least of which is the "control of sepsis," but my contention would be that a primary excision undertaken at a casualty clearing station within a few hours of infliction of the wound should be one of the means by which sepsis is *inhibited* and the patient is spared a long septic convalescence, possibly several operations for the removal of sequestra, and the formation of a firm mass of scar tissue around the joint which makes a secondary excision a much more formidable proceeding. In all of Mr. Swan's cases quoted in the *Proceedings of the Royal Society of Medicine*, May, 1917, septic infection was already present, and I venture to think that they cannot therefore be regarded as instances of the value of "primary" excision. Those who have been working at casualty clearing stations for two or three years without opportunities of correcting or confirming their opinions and practices by the knowledge of what is the ultimate judgement on them by those working at the base exhibit a very keen and laudable spirit of inquiry as to the end results of such and many other common casualty clearing station operations, and, as I know from recent personal experience, receive suggestions or criticisms in the most friendly manner; this is only one of many subjects on which the judgement of those who have wide experience at home would be heartily appreciated by surgeons who have only casualty clearing station experience to guide them.

If it were possible to improve most of the surgery done at casualty clearing stations it would be by the wider dissemination amongst the surgical specialists working there of the end results of war surgery.

I find that I have notes of seven cases of primary excision of the shoulder or elbow carried out at the time when the wounds were as far as possible completely excised, and foreign bodies, if present, removed; the chief indication seems to have been involvement of the articular surface with comminution, and on the extent of comminution must depend the amount of bone removed. As far as I can judge, there is a greater probability of restriction of normal movement by bone reformation, particularly in the elbow, than that too free removal of bone will result in a flail joint. If the injury was limited to the bones of the forearm, the humerus was left intact, and similarly, whenever possible, the radius and ulna were spared and the cut end of the humerus allowed to rest above the greater sigmoid cavity of the ulna. As my cases were usually able to be sent to the base within twenty-four hours, I have no knowledge of the end results, and it is chiefly in the hope that I may learn something from those into whose hands they have passed—particularly if the results have been imperfect—that I am now writing.—I am, etc.,

London, W., Dec. 18th, 1917. C. H. FAGGE.

SIR,—Major Hey Groves has, no doubt inadvertently, misrepresented what I wrote upon this subject. I have never advocated "primary excision of the elbow-joint in the presence of virulent sepsis." On the contrary, I deprecate most strongly any attempt at such a proceeding. It can only end in disaster. It is too late then, and there is nothing for it but to wait. But if, before this stage has been reached, while the infection has not yet spread into the soft tissues beyond the possibility of excision, the whole cavity is laid open, all damaged tissue and broken fragments of bone removed, and with them so much of the ends of the bones as will secure a sufficiently firm fibrous joint, much pain and suffering can be saved, and the arm will regain its full use in a far shorter time than under the present method of conservative treatment.—I am, etc.,

London, W., Dec. 23rd, 1917. C. MANSELL MOULLIN.

"PAINLESS CHILDBIRTH."

SIR,—The discussion of scopolamine-morphine narcosis in childbirth reported in your issue of December 15th involves questions of such national and even world-wide importance that an attempt at an elucidatory summary of the facts stated and a few comments thereon may possibly be of interest to your readers. I propose to allude to the five reports in the numerical order in which they are printed.

The reports do not state whether there was any selection of the cases; it may be presumed, however, that narcosis would not be adopted in cases already autotoxic from albuminuria, etc., and the patients were therefore in a certain measure selected.

The narcosis would seem to have been fairly equal in all, complete amnesia varying from 46.2 to 55.0 per cent.; hence the resulting phenomena might be expected to correspond very closely in the different sets of observations; this, however, is not the case; they vary very widely, and in some respects contradictorily. The details are variously summarized, making comparison difficult.

The narcosis, for example, is reported by No. 5 as being accompanied by excitement in 35 per cent., with maniacal excitement in a few. No. 4 says there was restlessness in 50 per cent., but no active delirium. The rest are silent on the subject of delirium. Again, in regard to involuntary muscular action, No. 1 reports of the first stage "there is sometimes entire cessation," the second is "markedly prolonged," and the third also prolonged. No. 2 reports "diminution in first stage for an hour or two, afterwards normal." No. 3 summarizes "marked delay in labour." No. 5 records "marked delay in labour, and on the contrary No. 4 states that labour did not seem so prolonged after the first injection; "any prolongation occurred before the injection." Of voluntary bearing down No. 1 reports "lack of, especially in primiparae"; No. 5, "as a rule subnormal, absent in 10 per cent."; No. 2, "present in 68 per cent."

Abnormal labours were reported by No. 1 as being in large proportion, Nos. 2, 3, 4 make no comment, and No. 5 remarks that there was an increased failure of occipito-posterior positions to undergo spontaneous rotation attributable to the lack of bearing-down efforts.

Instrumental relief was reported by No. 1 in 45 per cent.; is not stated in No. 2; No. 3 says was required in second stage owing to absence of strong expulsive efforts; No. 4 reports its use in 17.9 per cent. but as not being due to the effects of the drug. No. 5 reports an increase and "relatively difficult," owing to failure of bearing-down efforts. Ruptured perineum is recorded by No. 5 only, as being greatly in excess, due to difficulty in controlling the patient. Retention of urine was mentioned in one report only as occurring in 10 per cent.

The effects on the child seem to consist in very frequent difficulty in starting respiration, often with blueness and limpness, and it seems probable, as the President remarked, that the mortality was increased.

It would be of interest to compare these results with those of delivery in ordinary alcoholic narcosis; there must be ample material to make such a comparison, since a country midwife recently stated that it was customary on her arrival at a case in her district to be presented with a bottle of brandy and another of whisky, being asked to choose which she would take herself and which she would give to her patient. Since humanity is more or less tolerant of alcohol its use would probably be better borne than the drug in question and the patient would have the advantage, as in the example quoted, of enjoying her favourite form of alcoholic narcotic.

The view that narcosis prolongs labour, and that it would be still more prolonged but for instrumental interference, is largely admitted in these reports, and the acknowledged condition of the child at birth makes it probable that this might determine a fatal result in weakly or premature infants. This makes it very urgent that the registration of stillbirths should become a part of our law at the earliest possible date, with a proviso that the fact of birth under narcosis should be stated in the certificate, so that an inquest might be held if necessary.

I sincerely hope that all societies engaged in the effort to reduce infant mortality will direct their attention to this procedure, which threatens to assume very large proportions, and may still further lessen our diminishing birth-rate.—I am, etc.,

London, N.W., Dec. 22nd, 1917. HENRY RAYNER, M.D.

COMPRESSED MOSS DRESSINGS.

SIR,—Will you permit me to draw the attention of surgeons who are using sphagnum moss in military hospitals to the compressed form of moss dressings? Owing to their small bulk there is saving of cubic space in transport, also economy in use of packing materials. They are very carefully sublimated and otherwise prepared by workers who have had some years' experience. Before use the compressed dressing has to be expanded by soaking in lotion, but this is a very simple proceeding, and full directions are sent along with the dressings.

The workshops making these dressings are capable of turning out considerably more than they are at present asked to do, and as this form of dressing may not be so well known as the other forms, samples of compressed dressings, which are made in standard sizes, will be forwarded on application to the D.G.V.O., Scotland House, New Scotland Yard, London.—I am, etc.,

CHARLES W. CATHCART,
Lieut.-Colonel R.A.M.C.(T.).

Edinburgh War Dressings Supply,
37, Palmerston Place, Edinburgh, Dec. 27th, 1917.

WAR NEPHRITIS.

SIR,—I have read with interest the articles on war nephritis by Sir Thomas Oliver, and Captains Dunn and McNee. The last-named writers state that cases of war nephritis "with copious haematuria have certain features in common." This has also been our experience. Observations have been made on sixty such cases, and the history in the great majority is so similar that one cannot think it a mere coincidence.

Regimental medical officers are familiar with trench fever. All know how often painful shins occur either with or after the attack. How often one has to send men to hospital just because of this troublesome shin pain!

In hospital these patients are frequently seen. They sit up at night rubbing their shins—sleep is difficult, often impossible. On examining the shins in well-marked cases, wasting sensory changes are found. The recovery in most is slow, in others the following may complicate matters:

(1) Systematic examination of the urine in these cases shows that the urine is turbid. Pus cells may be present, and casts of a granular nature are not infrequent.

(2) A sudden pyrexia followed by haematuria.

(3) A definite nephritis with oedema (usually slight in these cases) but always showing a tendency to another pyrexial attack with haematuria. This may follow either (1) or (2).

This sequence of events may be purely accidental or otherwise indicative. One has seen trench fever in the line—seen painful shins follow it, sent the men to hospital, and learnt afterwards that in some nephritis followed. In hospital this war nephritis (haematuric variety) supervenes in these shin cases, and amongst all the diseased conditions in a medical division one has rarely seen it follow anything else. One has come to regard the sequence as a clinical group.

The suggestion is made on clinical grounds that these cases of painful shins (neuritic) and many cases of war nephritis (haematuric) are complications of trench fever; the suggestion is worth consideration.—I am, etc.,

ALEX. WM. HENDRY,
Captain R.A.M.C.

December 12th, 1917.

THE FOOD REQUIREMENTS OF THE SEDENTARY WORKER.

SIR,—Your estimate of the sufficiency of food is based entirely on the number of calories the food contains, and, as far as I know, every other estimate published is calculated by the same standard. I submit that this basis is insufficient, is grievously insufficient, and may be very fallacious.

In the first place, it omits altogether the necessity of vitamines. The amount of certain vitamines that is necessary for the maintenance of health has been calculated, and works out at about 2½ grains (not grams) per day for a man of 11 st. The value in calories of these 2½ grains is altogether neglectable, but they are of vital necessity in the diet. How then can a diet that is estimated in calories alone be pronounced sufficient? It may contain a superabundance of calories, and yet be gravely and even fatally insufficient.

Your scale was calculated for sedentary workers, but it took no account whatever of the character of the work done by the sedentary worker, and I submit that a diet scale that takes no account of the character of the work is as inefficient as one that takes no account of the quantity of the work. Different quantities of work require different diets, it is true; but different kinds of work also require different diets. At any rate, when we are calculating a minimal diet, it is surely of importance to take into account the kind of work as well as the quantity of the work.

I have shown by a demonstration admitted by you to be valid, that a certain minimum of protein is necessary to mental efficiency. Mental exertion of minimal amount utilizes and requires a certain minimum of protein. If this is so, is it not extremely likely that mental exertion beyond the minimum requires an amount of protein beyond the minimum? Is it not likely that what is true *simpliciter* is true *secundum majus et minus* also? Your calculations are made with respect to sedentary workers, as if the output of muscular exertion were all that need be taken into account; but sedentary workers may be employed on work, such as copying or typewriting, that is almost wholly automatic, and requires the minimum of mental exertion; or they may be employed in working out problems of the utmost intricacy and difficulty, involving great and prolonged mental exertion. Is it to be assumed as a matter of course that the diet scale of these two kinds of workers must be the same, and ought to be the same? Is it not almost certain that they ought to be different? I submit that when the number of calories has been estimated the task of composing a diet scale is not completed—: it is only begun. Even in the matter of calories alone, is no distinction to be made between one sedentary worker and another? Is the Home Office official, who works, beside a roaring fire in a double-windowed, turkey-carpeted, tobacco-atmosphered lounge, at the problem of the number of calories he requires in his food, to be placed on the same allowance as the man who works, insufficiently clad, in a draughty shed, at some unintellectual sedentary occupation such as may fall to the lot of any of us any day—such, for instance, as picking oakum? Sir, if you will take your place, voluntarily or involuntarily, in the latter situation, I think you will feel the necessity of different diet scales for different sedentary workers.—I am, etc.,

Parkstone, Dorset, Dec. 23rd, 1917. CHAS. MERCIER.

*** We publish elsewhere (p. 25) a note on the points raised in this letter, and a further discussion of the general subject in a leading article on the logic of the food position.

FUND IN AID OF DR. J. F. C. MEYLER OF DUBLIN.

SIR,—In the JOURNAL of October 13th, 1917 (p. 497), you were good enough to give publicity to the appeal which was made in this case, the result of which I am pleased to say has been quite satisfactory. I shall feel obliged if you will allow me, on behalf of the Committee, to thank the

subscribers, through your valuable medium, for their prompt and generous response.

My Committee are also greatly indebted to you for your kind assistance in the matter.—I am, etc.,

TREVOR N. SMITH,
Honorary Secretary, Meyler Fund.

8, Upper Fitzwilliam Street, Dublin,
Dec. 27th 1917.

Obituary.

WILLIAM DUNCAN, M.D., F.R.C.S.ENG.,

CONSULTING OBSTETRIC PHYSICIAN TO THE MIDDLESEX HOSPITAL.

WE regret to record the death, at the age of 61, of Lieut.-Colonel William Duncan, formerly obstetric physician to the Middlesex Hospital, and senior physician to the Chelsea Hospital for Women. Dr. Duncan studied medicine at St. Thomas's Hospital, where he won various scholarships and prizes. He qualified L.S.A. in 1879, obtained the M.D. degree of the University of Brussels, with first class honours, in 1880, and the diplomas of M.R.C.P.Lond. and F.R.C.S.Eng. in 1883. After holding with distinction several house appointments at St. Thomas's Hospital, and a prosectorship at the Royal College of Surgeons, for which he was awarded a first class certificate of honour, he was appointed lecturer in practical midwifery at the Middlesex Hospital, and assistant physician to the Chelsea Hospital for Women. In later years, as he rose to the senior post at each of these two institutions, he acted as examiner in midwifery and the diseases of women at the English Conjoint Board, the University of Glasgow, the Victoria University of Manchester, and the Apothecaries' Society. While resident accoucheur at St. Thomas's Hospital in the early eighties he was responsible for three annual reports of the obstetrical department of that hospital, and he subsequently made various contributions to the literature of gynaecology and obstetrics. On his retirement from active practice Dr. Duncan was appointed to the consulting staffs of the Middlesex and Chelsea Hospitals. In 1909 his zeal on behalf of the volunteer movement was rewarded with the Territorial Decoration; and during the next five years he served as lieutenant-colonel commanding the Middlesex Yeomanry. He was a justice of the peace for the County of Bucks, and in 1908 held the office of sheriff.

MR. VICTOR BONNEY writes:

I worked with and under the late William Duncan for many years, and should like to express my esteem for him. He was a genial and kind-hearted man, and generous and loyal to his colleagues and juniors. As an operator he was exceedingly conscientious, careful, and neat, and possessed in a high degree the qualities of tenacity and determination, so that though he never adopted the full gamut of modern aseptic technique, his cases did exceptionally well at a period when the mortality and morbidity of abdominal section were much greater than at present. Had his entire energies been applied to his professional work he would have accomplished far more than he did, but his conviction (now so fully proved right) that national defence was the first concern of all men led him to devote much of his time to voluntary military service. His long-time ambition was about to be realized, and as colonel of his yeomanry regiment he was just going to France when the incurable condition from which he died suddenly declared itself. Though he knew that death in sudden agony might come to him any minute, and could not be long delayed, an invalid, and in more or less constant pain and discomfort, he maintained the same steady fortitude and courage which I shall always remember as his chief characteristic in the operating theatre.

We are indebted to Mr. COMYNS BERKELEY for a personal memoir from which we take the following extracts:

Apart from his professional attainments, which were of a high order, William Duncan will be remembered most for his unswerving loyalty to his friends, and for the thoroughness with which he did everything that he took up. A St. Thomas's man, from the day he was appointed to the staff of the Middlesex Hospital until the day of his death he was imbued with the spirit of Middlesex, and, while in its active service, he in every way identified himself so much with this institution that it may truly be said it never had a more devoted member. A large number of residents and students have had occasion to be grateful for the help he gave them.

Everything that Duncan seriously took up he did well at. In his early days he joined the Duke of Cambridge's Hussars as surgeon, but as this post gave him very little to do he changed into the combatant ranks, and at once set to work to make his troop the best in the regiment. When the South African war broke out, Major Duncan, as he then was, prepared at once to go out with a draft from his regiment. To his great disappointment his senior officer was sent out in charge. In due course Duncan rose to command the regiment, the name of which by this time had been changed to that of the Middlesex Yeomanry. This military side of his life is the best example, apart from his professional work, of the very thorough manner in which Duncan carried out anything he took up, but there were others. Made a Freemason comparatively late in life, nevertheless Duncan worked at the craft with such enthusiasm that in a few years he became, in virtue of his work, a Grand Officer, and there was none who knew the ritual better or could deliver it more impressively. He was a Founder of the Middlesex Hospital Lodge, the Middlesex Yeomanry Lodge, and the Middlesex Yeomanry Chapter.

Duncan was very fond of the country, and, for some years before he retired and after, he lived at Shenley and was very popular with the villagers and farmers in the neighbourhood. He was on the local Bench and founded a cricket and football club. Nothing gave him more pleasure than to invite teams down, and many an old Middlesex man will recall those very pleasant outings and the lavish hospitality dispensed by their host. He also kept a pack of harriers, and was very successful as their Master.

William Duncan, if not a brilliant, was at any rate a very fine operator. He paid the greatest attention to details, not neglecting to stop all oozing of blood because the hands of the clock would show that the operation had taken a few minutes longer, and handling all tissues with the greatest gentleness. His results were extremely good and his temperature charts were remarkably steady, in spite of the fact that he never followed the aseptic ritual to such a degree as commonly obtained in the latter years of his professional life.

LIEUT.-COLONEL JOHN ROCHE RAHILLY, R.A.M.C. (retired), died at Weston-super-Mare on December 26th, 1917, aged 73. He was educated in Dublin, took the L.R.C.S.I. and the L.R.C.P.Edin. in 1865, and entered the army as assistant surgeon on March 31st, 1868, becoming surgeon on March 1st, 1873, and surgeon-major on March 30th, 1880, and retiring on November 28th, 1888. While the regimental medical system was in force he was medical officer of the 21st Royal Scots Fusiliers.

SURGEON-MAJOR JOHN ROBB, Bombay Medical Service (retired), died at Aberdeen on December 20th, 1917, aged 74. He was educated at Aberdeen University, where he graduated M.B. and C.M. with honours in 1866, and M.D. in 1876. Entering the I.M.S. as assistant surgeon on October 1st, 1868, he became surgeon on July 1st, 1873, and surgeon-major on October 1st, 1880, retiring on November 2nd, 1889. From 1873 to 1882 he served as residency surgeon at Zanzibar, acting also from time to time as assistant political agent, and between 1882 and 1889 was civil surgeon at Aden, Surat, and Ahmedabad successively. He was the author of *A Medico-Topographical Account of Zanzibar*, published in 1889.

DR. EDOUARD DELANGLADE, professor in the Medical School of Marseilles, was killed recently by a shell while visiting a dressing station in Alsace. He studied medicine in Paris, where he was *interne*, and graduated in 1895 with a thesis on congenital luxation of the hip and its surgical treatment. He won a high position at Marseilles, where he was the leading surgeon.

DR. FIEUX, *professeur agrégé* in the medical faculty of the University of Bordeaux, lost his life on December 9th as the result of an accident among the mountains near Grenoble, where he was in charge of a military hospital. He held the rank of médecin-major, 1re classe, and his courage, devotion to the wounded, and operative skill won for him the Cross of the Legion of Honour. He was 49 years of age, and took his degree at Bordeaux in 1896. He was on the staff of the Bordeaux Maternity, and had a great reputation as an obstetrician and gynaecologist; he had also earned distinction as a biologist. He was one of the pioneers in the serum diagnosis of pregnancy.

DR. FRANKLIN P. MALL, professor of anatomy in Johns Hopkins University, Baltimore, who died on November 17th, 1917, was born in Iowa in 1862, and graduated M.D. Michigan in 1883. He was appointed instructor in pathology at Johns Hopkins University in 1888. From 1889 to 1892 he was professor of vertebrate anatomy in Clark University, Worcester, Massachusetts; he next held the chair of anatomy in the University of Chicago, but in 1893 returned to Johns Hopkins as professor of the same subject. In 1915 he was appointed director of embryology in the Carnegie Institution at Washington. He was president of the Association of American Anatomists from 1905 to 1907.

Universities and Colleges.

UNIVERSITY OF EDINBURGH.

THE Senatus reported to the University Court on December 17th, 1917, that they had approved a recommendation of the Faculty of Medicine that a course on tuberculosis shall be obligatory in the medical curriculum as from October 1st, 1918, and that the course shall consist of lectures and practical instruction, open to final year students of the University. Principal Sir Alfred Ewing presided at a medical graduation ceremonial on December 19th. The candidates for degrees were presented by Professor Littlejohn, Dean of the Faculty of Medicine. Sir Alfred Ewing in the course of his address announced that 67 medical students had returned to their studies from service in the army, and 46 from service in the navy. The students of medicine attending the University now numbered 849, against 783 at the corresponding date last year; and of these 849 students 564 were men and 285 were women.

The following degrees were conferred:

M.D.—F. T. Bowerbank,* W. T. James, P. W. Lam, C. Robertson, W. F. J. Whitley.*

* Commended for thesis.

M.B., CH.B.—G. Balsillie, A. O. I. Brownlee, D. Cook, A. C. C. Craig, Kshirendra Mohan Dey, J. W. C. Fairweather, D. T. P. Gay, R. N. Gibson, J. G. Gilruth, J. T. Godfrey, Elizabeth Harper, J. H. Kerr, V. St. C. Lucas, A. S. M'Kern, S. D. Nurse, W. G. F. Owen-Morris, J. E. Purves, E. G. Pyott, A. Robertson, Mary J. Rutherford, R. L. Stewart, J. A. Stirling, F. B. Sutherland, E. T. N. Taylor, P. F. V. Walsh, D. M. Young, J. W. van Zyl.

UNIVERSITY OF ABERDEEN.

THE following degrees were conferred on December 18th, 1917:

M.B., CH.B.—J. B. Mutch, D. J. V. Pereira, H. Roger.

UNIVERSITY OF ST. ANDREWS.

THE following candidates have been approved at the examination indicated:

M.B., CH.B.—Kathleen I. David, W. A. Fraser, Dora M. Walker.

UNIVERSITY OF DUBLIN.

THE following candidates have been approved at the examinations indicated:

FINAL M.B.—*Part II. Medical Jurisprudence and Hygiene; Materia Medica and Therapeutics; Pathology:* J. G. Holmes,* R. Resnekov,* J. J. G. de Kock,* J. C. J. Callanan,* H. B. Van der Merwe,* A. H. Thompson, J. F. Sheppard, V. G. Walker, C. D. Brink, Mary C. Sheppard, T. J. R. Warren, R. W. Shaw, C. J. Quinlan, A. Blagoff, C. H. Keller (Medical Jurisprudence and Hygiene, Materia Medica and Therapeutics).

* Passed on high marks.

FINAL M.B., B.CH., B.A.O.—*Part II. Medicine:* Meta G. Jackson, S. A. Clark, F. W. P. Sullivan, W. Sweetnam, J. R. Brennan, C. P. Chambers, T. S. McDonald, J. B. Taylor. *Surgery:* H. L. Parker,* T. S. McDonald, J. M. Hill, W. V. Pellissier, P. A. Dormer, Margaret Wolfe, L. J. Nugent, D. S. Prentice,† Olive G. Blackham, T. E. Hill. *Midwifery and Gynaecology:* T. S. McDonald, W. P. Elford, E. J. Lyndon, F. J. Dymoke, J. E. Jameson, W. V. Pellissier, E. E. Rollins, F. W. Godbey, E. S. E. Mack, L. J. Nugent, K. Greer, C. H. Keller.

* High marks. † To be examined in Pathology.

D.P.H.—*Part I. Bacteriology, Pathology, Chemistry, Physics, and Meteorology:* R. B. Jackson.

Part II. Sanitary Engineering; Vital Statistics and Public Health; Hygiene and Epidemiology: R. B. Jackson, T. Kirkwood.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.

AT the annual meeting of the College Professor William Russell was elected president, Dr. Freeland Barbour vice-president, Dr. Norman Walker treasurer, Dr. H. Dingwall-Fordyce secretary, and Dr. H. Graham curator of the Research Laboratory.

Medical News.

A BROTHERHOOD of comrades-in-arms has been formed among the Austrian military doctors.

WITH the object of promoting the study of tropical medicine in Nicaragua a medical association of the Atlantic seaboard of that republic has been founded at Bluefilds.

THE American Ambassador in Rome was authorized some time ago to draw on the Red Cross for any amount up to £50,000 to be applied to relief work in Italy. On November 11th a further sum of £50,000 was appropriated to meet emergency expenses arising from the recent reverses of the Italian army.

KING GEORGE'S Fund for Sailors now amounts to £263,000, and the Council has made a distribution of £55,000 to various marine benevolent institutions, including £5,000 to the Grand Fleet fund for the relief of immediate distress among men of the Royal Navy, their widows and dependants.

THE schedule to the Poison and Pharmacy Acts, 1908, has recently been amended by the transfer of the following substances from Part 2 to Part 1: "Diethyl-barbituric acid, and other alkyl, aryl, or metallic derivatives of barbituric acid, whether described as veronal, proponal, medinal, or by any other trade name, mark, or designation; and all poisonous urethanes and ureides."

THE book on *The Organization and Methods of the Military Orthopaedic Hospital*, Shepherd's Bush, can be obtained (price 2s.; post free 2s. 3d.) on application to the officer in charge of the hospital, Ducane Road, Shepherd's Bush, London, W.12. It is not supplied direct from the printers.

THE Committee of the French Surgical Association has decided that the annual congress, which has been in abeyance since the beginning of the war, shall be held in 1918, at a date to be fixed later. The meeting will be exclusively devoted to questions of war surgery. Communications should be addressed to the General Secretary, Dr. J. L. Faure, 10, rue de Seine, Paris.

THE Japanese Ambassador in Rome has handed to the Prime Minister of Italy the sum of £62,258 to be applied for the benefit of wounded soldiers and refugees from the invaded provinces. The money was collected by a Japanese society of which the head is Prince Tokingawa, President of the Chamber of Peers, and among the promoters of the movement was the Japanese Prime Minister.

THE authorities in Berlin have decreed that on the doorplates of doctors called up by the army particulars shall be given as to the address and consultation hours of their substitutes. The army doctor who is still able to attend to some of his civilian practice must state on which days he may be consulted. These regulations have been necessitated by the many complaints of time lost in applications for urgent medical attendance from medical men found to be absent on war work.

THE Board of Education announces that the Science Museum, South Kensington, was reopened to the public on January 1st. The museum has been closed to the public for nearly two years; it has, however, been open without interruption for students. The greater part of the museum will be open free on every week day from 10 a.m. to 5 p.m. and on Sundays from 2.30 p.m. to 5 p.m. Almost simultaneously comes the announcement that the Government has decided to commandeer the British Museum for the offices of the Air Ministry, and has maintained its decision in spite of the unanimous protest of the trustees.

A MEETING of the Royal Sanitary Institute will be held on January 11th and 12th in the Town Hall, Chester, under the chairmanship of Professor A. Bostock Hill, M.D. On Friday, January 11th, at 7 p.m., Dr. Naylor Barlow (M.O.H. Wallasey) will open a discussion on the present position with regard to venereal diseases and the sufficiency of the methods now available for combating them. On Saturday, January 12th, Dr. Meredith Young (county M.O.H. Cheshire) will open a discussion on "Activated Sludge." Those wishing to take part in the discussions can obtain a copy of the papers to be read on application to the Secretary of the Institute, 90, Buckingham Palace Road, S.W.

Letters, Notes, and Answers.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C.2, on receipt of proof.

The telegraphic addresses of the BRITISH MEDICAL ASSOCIATION and JOURNAL are:

1. EDITOR of the BRITISH MEDICAL JOURNAL, *Aitiology, Westrand, London*; telephone, 2631, Gerrard.
2. FINANCIAL SECRETARY AND BUSINESS MANAGER (Advertisements, etc.), *Articulate, Westrand, London*; telephone, 2630, Gerrard.
3. MEDICAL SECRETARY, *Medisecra, Westrand, London*; telephone, 2634, Gerrard. The address of the Irish Office of the British Medical Association is 16, South Frederick Street, Dublin.

The address of the Central Medical War Committee for England and Wales is 429, Strand, London, W.C.2; that of the Reference Committee of the Royal Colleges in London is the Examination Hall, 8, Queen Square, Bloomsbury, W.C.1; and that of the Scottish Medical Service Emergency Committee is Royal College of Physicians, Edinburgh.

LETTERS, NOTES, ETC.

EASY STARTING OF MOTOR CAR.

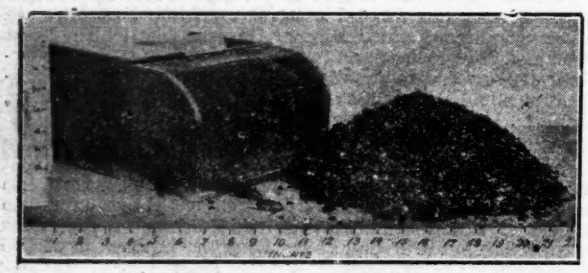
DR. J. CRYER (Manchester) writes: Any medical man who has an ordinary gas jet in his garage, attaches 6 ft. of flexible tubing, and inserts it into the air inlet of the carburetter, will find starting on a cold morning reduced to simplicity itself.

SUPPURATING THYMUS.

DR. ARTHUR J. MATHISON (Hornsey) writes that he made a *post-mortem* examination on a female infant four months old on November 28th and found a suppurating thymus, which he thinks is a very rare condition. Probably suffocation was produced gradually, as both lungs were congested.

THE JAPANESE FLY TRAP.

CAPTAIN N. S. GILCHRIST, R.A.M.C., writes: The enclosed photograph of the now famous "Japanese fly trap" may interest readers of the BRITISH MEDICAL JOURNAL. Out here in Egypt we can find nothing to equal it, and the heap of flies beside it represents about a week's work at a time of the year when flies in camp were comparatively few. It is quite a simple machine of two main parts, the wire-gauze cage (detachable) and the machine to catch the flies, which consists of a revolving wooden drum, driven by clockwork. The



keyhole is visible. All the trap is of dark wood varnished, except the rollers, which should be white, as the fly is at once attracted by the shiny surface. All the trap should be scrupulously clean except the rollers, which are baited with any sort of sweet filth attractive to flies; milk and sugar acts well, or watered molasses or treacle, and so does egg, blood, etc., only these are apt to dry hard, and retard the action of the clock. The fly sitting on the slowly-revolving drum is carried into the bottom of the box, which is dark; but he sees a gleam of light leading from the wire cage, and makes a rush for it. He never finds his way out again. The trap is excellent in every way, and is a Japanese patent.

TRENCH FEVER AND THE NOTIFICATION OF INFLUENZA.

PRO BONO PUBLICO writes: In view of the possibility of a new "infectious" disease in the guise of trench fever becoming prevalent in this country, would it not be an advantage to have, for the duration of the war, all cases of so-called influenza notified? Not only would treatment in an isolation hospital help to reduce the number of cases rendered unfit or practically incapacitated, but it would give opportunity for the search for the causal factor. Most isolation hospitals have sufficient laboratory accommodation for carrying out the necessary investigations, and the best results would probably be had from cases removed from houses where members of the household have returned from active service, and where there is the possibility of vermin transmission.

MEDICAL OFFICERS AND OFFICE WORK.

SUBURBAN MEDICO, while recognizing that there is a prospect of reforms being made which will obviate the complaints of lack of work from temporary officers of the R.A.M.C., writes to point out that at the present time, in every medical unit, at least one officer is practically fully occupied with the work that in the infantry falls to the company officer and adjutant—that is, courts-martial, orderly room, censoring of letters, paying the men, inspection of kit and quarters, and the numberless office duties. The work, he thinks, could be done by a combatant officer, unfitted for further active service by wounds or disease, attached to each medical unit.

CIVIL SURGEONS IN MILITARY HOSPITALS.

C. S. writes to draw attention to the case of civil surgeons engaged in whole-time work at military hospitals who volunteered for commissions early in the war, and having been rejected as totally unfit even for home service, gave up their appointments or practices about two years ago in order to release fit men for service abroad. They were put to full work, he says, including night duty and the meeting of ambulance trains at various terminuses at all hours of the day and night. Commissions have not been given to these medical men, and they can be dismissed or go voluntarily at a day's notice. The War Office takes no responsibility for their health; if they fall ill, their pay stops whilst they are off duty; it is even a matter of some difficulty to get them into their own hospitals when sick, and while in hospital they are charged 6s. a day. As they wear no uniform, not even a badge, few people know they are serving their country. They are entitled to no gratuity, however long they have served, and they get no facilities for travelling by rail such as their commissioned colleagues do. Our correspondent submits that such civil surgeons are entitled to some official recognition and a little more generous and considerate treatment.

THE PENETRATING POWER OF A BRITISH BULLET.

DR. W. MILNER BURGESS (Frinton-on-Sea) writes: Whilst acting as resident medical officer I was called to a soldier in a billet (second floor) who, whilst cleaning his rifle, without knowing that a live cartridge was in the breech, shot himself through the anterior surface of the left femur, between the middle and lower third, causing a compound comminuted fracture (a splinter of bone being picked off the floor); the bullet passed out through the popliteal space, causing free bleeding, the man being blanched, but the posterior tibial could be felt at the inner ankle. He was removed to hospital and did well. The bullet next passed through the second floor and the ceiling of the first floor, wounding a man on the right wrist, dorsal aspect, superficially from the ulnar to the radial side; passed through the first floor and ceiling of the ground floor, missing a man's head; and struck the hearthstone, ricochetting and burying itself in the ground floor.

PHTHISIS AND CANCER IN A RURAL DISTRICT.

"M.D." sends us notes on an examination he has made of the statistics on phthisis and cancer in a parish in the south of Scotland for the period from 1880 to the present year. The parish is purely agricultural, the industry of stocking weaving at one time carried on being now extinct. The population of the parish was 1,015 in 1891, 939 in 1901, and 865 in 1911. The following figures, showing the deaths from the two diseases in the periods mentioned, may be of interest for the purpose of comparison:

Period.	Pulmonary Tuberculosis.					Cancer				
	No. of Deaths.	M.	F.	Average Age at Death.		No. of Deaths.	M.	F.	Average Age at Death.	
				M.	F.				M.	F.
1880—1890 ...	44	13	31	31	29	5	2	3	67.6	65.3
1890—1900 ...	26	9	17	34	29	13	6	7	70	69
1900—1910 ...	16	8	8	35	27	8	4	4	61.6	72
1910—1917 ...	10	3	7	34	26	6	1	5	74	51.2
Totals ...	96	33	63			32	13	19		

The statistics are typical of what we are accustomed to see during the past four decades—namely, a large reduction in the number of deaths from tuberculosis (pulmonary in this instance, with one or two cases of tuberculous meningitis and peritonitis), and a slight increase in the number from cancer. The average age at death is typical of the two diseases, and the preponderance in the number of female cases is striking, also the greater age of the male cases.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

	£	s.	d.
Seven lines and under	0	6	0
Each additional line	0	0	9
Whole single column	4	0	0
Whole page	12	0	0

An average line contains six words.

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Advertisements should be delivered, addressed to the manager, 429, Strand, London, not later than the first post on Wednesday morning preceding publication, and, if not paid for at the time, should be accompanied by a reference.

NOTE.—It is against the rules of the Post Office to receive *poste restante* letters addressed either in initials or numbers.